

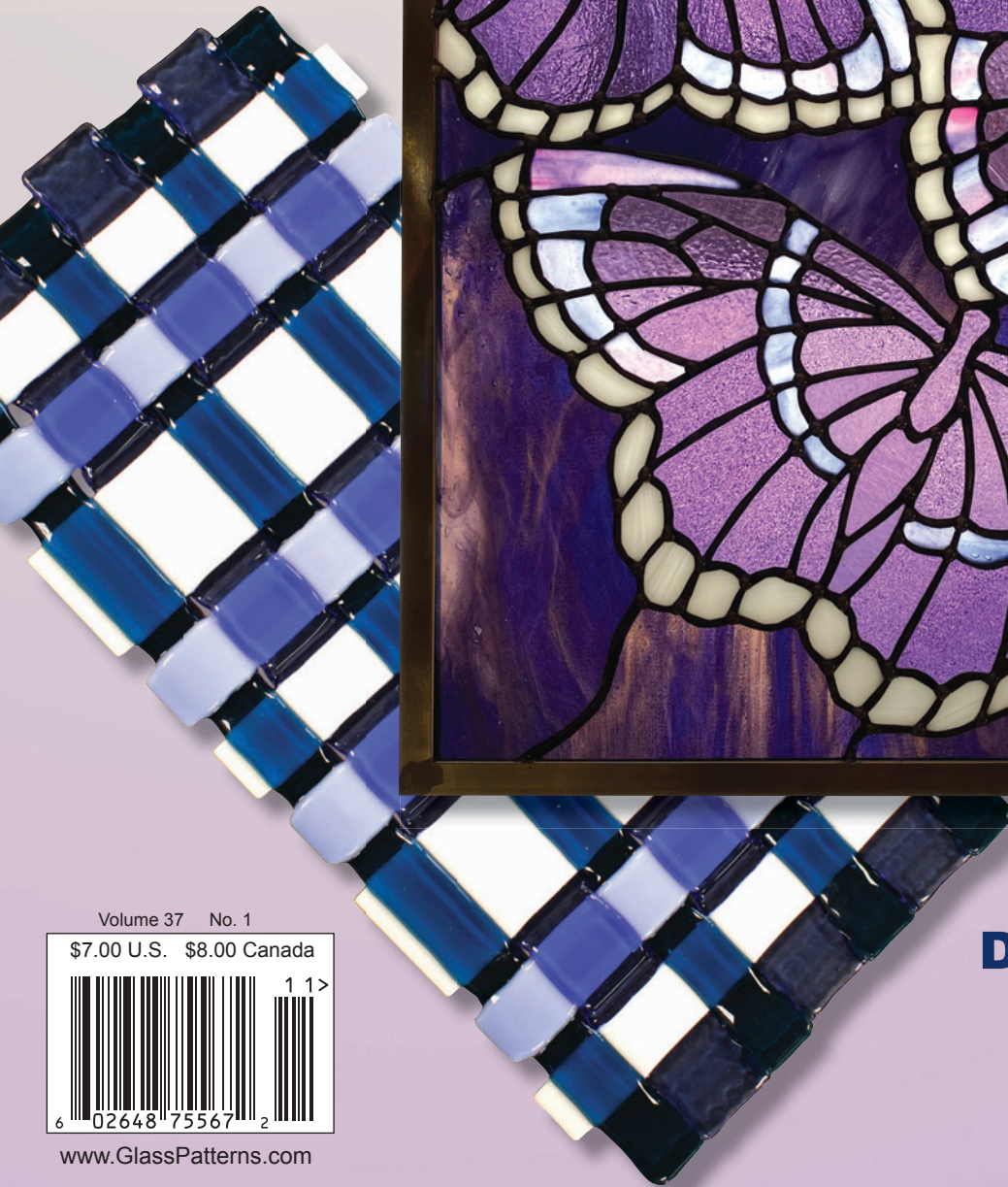
# GLASS PATTERNS®

— Q U A R T E R L Y —

Spring 2021

Volume 37 • No. 1

**DIY**  
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**Lighting**  
**and Wall Art**



Volume 37 No. 1

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*Lisa Vogt holds one of her kiln formed vessel sinks.*



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Editorial May 20, 2021

Ad Closing July 20, 2021

Ad Materials July 30, 2021

#### *Winter, Wildlife, and Landscapes*

Editorial August 20, 2021

Ad Closing October 20, 2021

Ad Materials October 30, 2021

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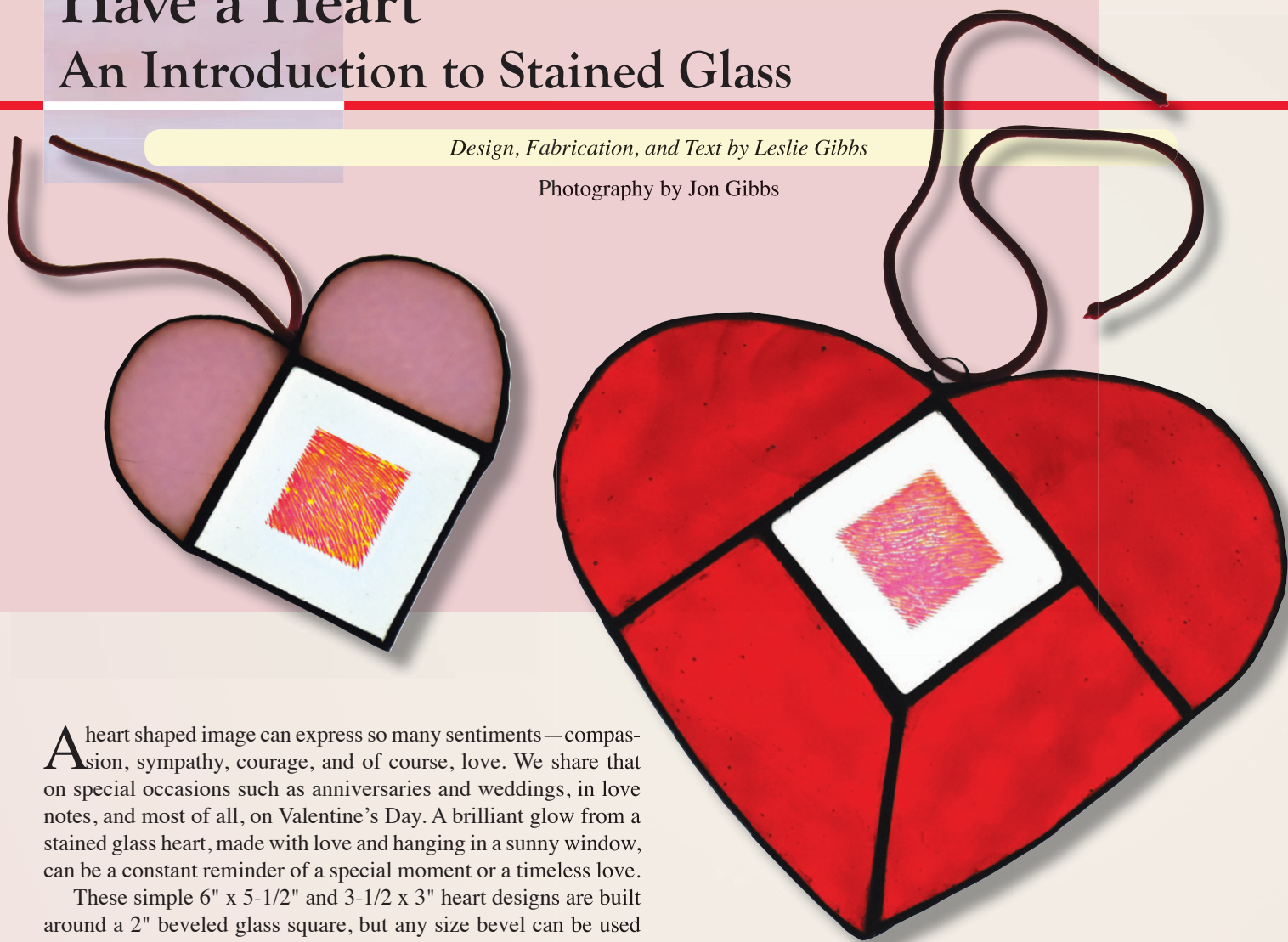


# Have a Heart

## An Introduction to Stained Glass

*Design, Fabrication, and Text by Leslie Gibbs*

*Photography by Jon Gibbs*



A heart shaped image can express so many sentiments—compassion, sympathy, courage, and of course, love. We share that on special occasions such as anniversaries and weddings, in love notes, and most of all, on Valentine's Day. A brilliant glow from a stained glass heart, made with love and hanging in a sunny window, can be a constant reminder of a special moment or a timeless love.

These simple 6" x 5-1/2" and 3-1/2 x 3" heart designs are built around a 2" beveled glass square, but any size bevel can be used by simply adjusting the sections that surround the bevel. I even put two tiny pieces of glass around a beautiful diamond shaped glass gem that I had in the studio for years, wondering where I would eventually use it.

The bevels I used have a dichroic center, but you can use a plain clear bevel, a colored bevel, and even etch an image or sentiment on a clear square of glass. Just have fun with this project. It's quick and easy to create and yet can express so very much.

### **Bullseye Glass Co.**

001122 Red Iridescent for Larger Heart, 4" x 8"

001831 Ruby Pink for Smaller Heart, 3" x 4"

001442 Neo-Lavender for Diamond Shaped Gem, Scrap

### **Tools and Materials**

1/8" and 3/16" Silver-Backed Copper Foil

60/40 Solder Scissors Cotton Swabs

Old Toothbrush Hanging Hooks

Kem-O-Pro® Polishing Wax

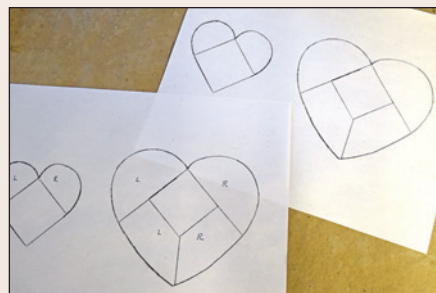
Black Patina Soft Cloths Flux

Flux Remover X-Acto® Knife

Decorative Ribbon for Hanging (optional)

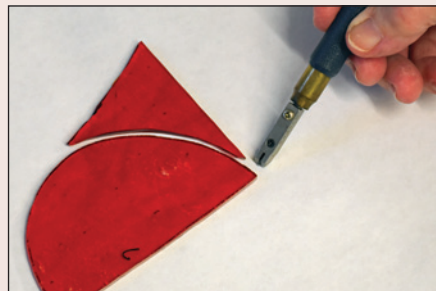
*Make two copies of the pattern, one for layout, and one to cut apart.*

1



*Following the pattern sections, cut the glass that surrounds the bevel.*

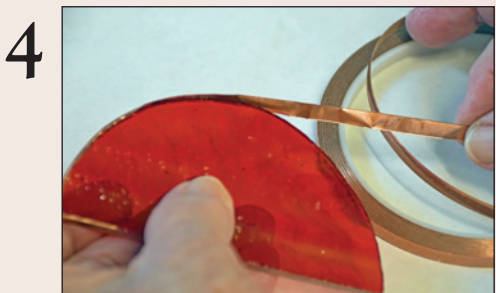
2



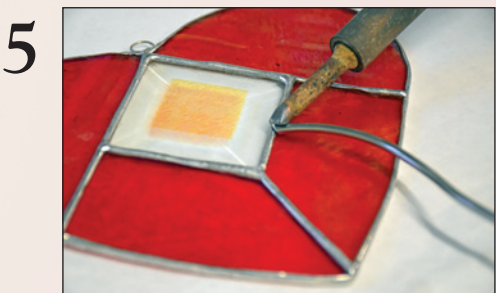
Grind the cut sections, then clean them and set them aside.



Foil each section of glass.



Apply flux to the glass sections and position them on the pattern, then solder the sections together.

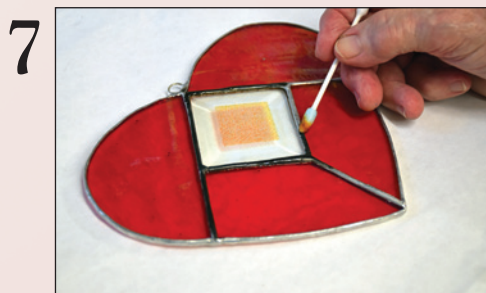


Now flip the heart and solder the other side.

Position the hanging hook in the center of the heart groove and solder it onto the heart.



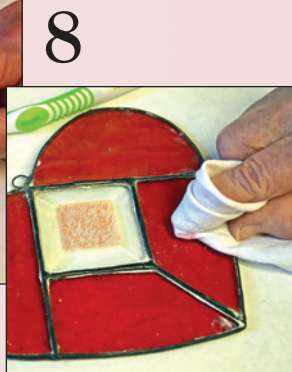
Clean the glass carefully with flux remover and let the piece dry, then apply patina if desired.



Clean off any excess patina.



Polish the heart.



Using a clean soft cloth, apply the Kem-O-Pro polishing wax to one side of the piece and let it dry to a haze. Flip the piece and apply polish to the other side. When the wax is dry, use another clean soft cloth and polish the heart. An old toothbrush helps to remove the dried polish from any tight areas.

There you go, a shimmering heart to display in a sunny window. As Carlos Santana once wrote, "If you carry joy in your heart, you can heal any moment." So carry the joy and don't use suction cups to display your creation, or you may end up with a broken heart.

GPO



With a main focus in drawing and painting, Leslie Gibbs enjoys transforming her more traditional artwork into glass. Charmed by both wildlife and the creatures of the sea, she often depicts the real along with the fanciful denizens of these worlds in her design and pattern books.

Leslie and Jon are longtime Florida residents. They currently live and work in a small beach town in Northern Florida, having forsaken the Badlands of South Florida for a more peaceful lifestyle featuring more wildlife and less concrete. A relentless jokester, the artist tackles life's common absurdities with a wicked sense of humor and a relaxed attitude. Visit [www.facebook.com/lesliegibbsstudio](http://www.facebook.com/lesliegibbsstudio) to learn more about Leslie and her art.

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# Amsterdam School Hearts

*Design, Fabrication, and Text by Chantal Paré*

*"The heart of man is very  
much like the sea,  
it has its storms,  
it has its tides and  
in its depths;  
it has its pearls too."*

*Vincent van Gogh*



Stained glass windows are ubiquitous in Amsterdam. Influenced by the sobriety of the Amsterdam School of Architecture, glaziers used a predominance of vertical and horizontal lines in creating patterns with basic colors like cobalt blue, yellow, red, and green. When curves were incorporated, they were often of a regular and gentle curvature.

With this source of inspiration in mind, the *Amsterdam School Hearts* design lines up a bold trio of hearts in a simple geometric scaffolding that decorates the top and bottom of the window, but the eye is drawn into the long view afforded by the four long pieces of clear float glass.

This 25" x 17" window, which includes the 1/2" border, is an easy, fast, economical, and attractive project that is well suited for lead came and its bolder, more traditional, lead lines. The clear textured glass is readily available, and the red color can be easily substituted if necessary. Its simplicity makes it a perfect match for any decor.



### Youghiogheny Opalescent Glass

Oceana 605 White on Dark Red  
for Hearts and Accents, 10 Sq. Ft.

### Wissmach Glass Co.

Seedy-01 Clear Seedy for Background, 1-1/2 Sq. Ft.

Clear Cortex for Background, 1/2 Sq. Ft.

Hammered-01 Clear Hammered for Background, 1 Sq. Ft.

### Additional Glass

3 mm Clear Float Glass, 4 Sq. Ft.

### Tools and Materials

1/2" U-Channel Zinc Came    Steel L-Square Ruler  
3/16" or less H-Channel Flat or Round Lead Came  
Electric Grinder with 3/4" and 1/4" Medium Grit Head  
Carbide Wheel Glass Cutter    Glass Cutting Pliers  
Claw Hammer    Soft Mallet    Wood Saw  
Metal File    Masking Tape    Window Putty  
14-Gauge Pretinned Copper Wire  
Lamp Black    Lead Came    60/40 Solder  
Soldering Flux    Calcium Carbonate (Whiting)  
Burnishing Brush    Tin Cutters    Came Miter Saw  
Horseshoe Nails (City Head, size 5)    Light Box  
Masking Tape or Electrical Tape    Dish Soap

1

*Transfer the pattern onto the clear glass.*



Print a copy of the pattern and trace each piece onto the clear glass selections. Use a ruler to trace the straight lines.

2

*Trace the heart pattern onto the opalescent red glass using backlighting.*



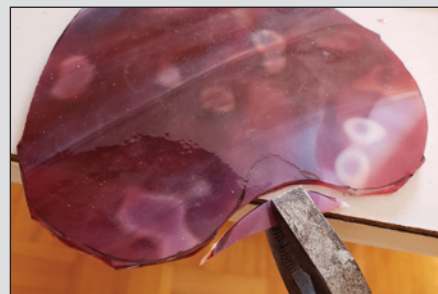
3

*Score and break the glass pieces.*



4

*Save some of the glass in the undercut of the hearts to remove later with the glass grinder.*



5

*Create a jig by hammering wood strips around three sides of the paper pattern, omitting the right side.*



Use a steel L-square ruler to make sure the corners are square and double check that the opposing sides are the same length.

6

*With a metal saw, fabricate a frame with the U-channel zinc came using the pattern and jig as a guide.*



Use a marker to indicate where to saw. Test to see if the U-channel came is wide enough for glass to fit in. If not, stretch it open a bit more by zigzagging along the inside with a fid or using pliers like a fid.

7

*Smooth out each cut frame segment with a metal file.*



8

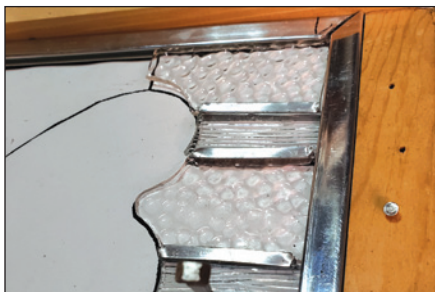
*Cut the lead came pieces for the interior of the design.*



With tin cutters or a lead knife, cut the lead came pieces and abut them against the corresponding glass pieces following the paper pattern. You can lightly scratch the surface of the came with a horseshoe nail to mark the length that needs to be cut.

9

Starting at the upper left corner, lead the vertical lines that abut the top of the frame.



Use horseshoe nails to keep the pieces in place throughout your progress.

10

With an electric grinder, use the 3/4" then the 1/4" bit to grind out the undercuts in the three heart pieces.



11

Wrap the central heart with a single piece of lead, with the ends meeting at the pointed tip of the heart.



12

Mark where the central heart overlaps the lateral hearts and wrap the lateral hearts with lead.



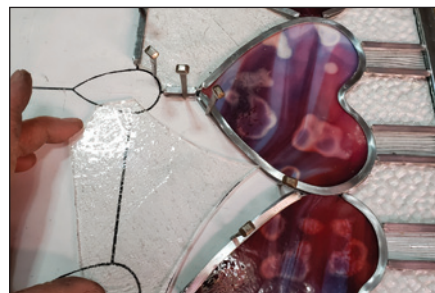
13

Wrap the lateral hearts much like the central heart but omit the area on the edge that overlaps with the central heart.



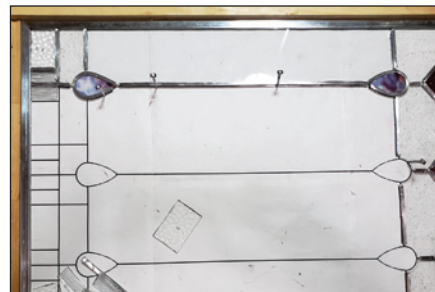
14

Going from left to right, set in the seedy glass pieces under the hearts.



15

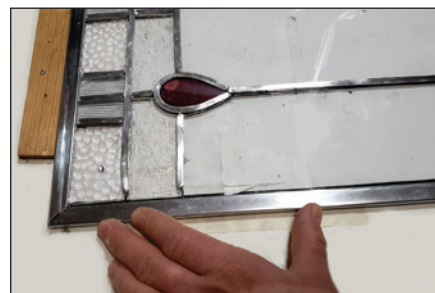
Going forward, lead the project from the bottom left corner progressing toward the right side.



Doing so will facilitate the side-to-side insertion of the large pieces of float glass.

16

Insert the glass pieces on the right side of the panel into the U-channel zinc came.



After you have leaded your way to the right side of the project, carefully insert the glass pieces on the edge into the U-channel zinc came of the metal frame by pushing the segment against the glass. Secure with horseshoe nails.

17

Using masking tape as resist, make patterns on the zinc that enhance the geometry of the design.



18

Solder the outer lead lines to the zinc frame.



## NEW! CABOCHON SNAP & SWITCH

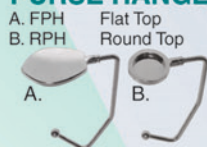


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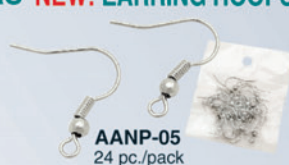
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 A. SMT Short Mandrel  
 B. RMT Round Top  
 C. FMT Flat Top  
 ITEM# **STAINLESS STEEL**  
 A. SMT-SS Short Mandrel  
 B. RMT-SS Round Top  
 C. FMT-SS Flat Top



### KEY HOLDERS



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 B. RKH Round Flat  
 C. FKH Flat



AANP-05  
24 pc./pack

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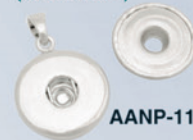
SPBSB  
1.5" W x 3" H

### TEA SERVER



TTT2 Tea Server  
TTT1 Extension Kit

### Pendant (without chain)



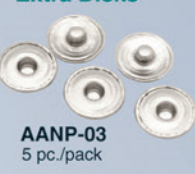
AANP-11

### Earrings



AANP-12

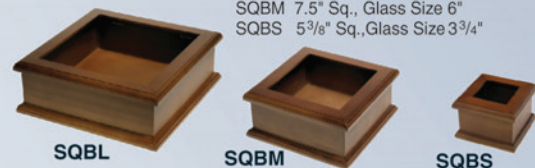
### Extra Disks



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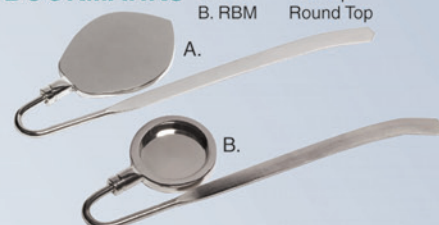


SQBL

SQBM

SQBS

### BOOKMARKS



A. FBM Flat Top  
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TTT2

TTT1

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 ITEM# **SILVER PLATED**  
 SLBL Large  
 SJBM Medium  
 SJBS Small

- ITEM# **GOLD PLATED**  
 GJBL Large  
 GJBM Medium  
 GJBS Small  
 ITEM# **.925 SILVER**  
 925L Large  
 925M Medium  
 925S Small

### Heart Bails



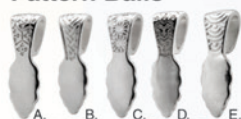
- ITEM# **SILVER PLATED**  
 SHBL Large  
 SHBM Medium  
 SHBS Small  
 ITEM# **GOLD PLATED**  
 GHBL Large  
 GHBM Medium  
 GHBS Small

### Earring Bails



- LEAF EARRING BAILS  
 ITEM# DESCRIPTION  
 SEBS SILVER PLATED  
 GEBS GOLD PLATED  
 HEART EARRING BAILS  
 ITEM# DESCRIPTION  
 SHBS SILVER PLATED  
 GHBS GOLD PLATED

### Pattern Bails



- ITEM# **SILVER PLATED**  
 A. SPBL-6 Hexagon  
 B. SPBL-H Hashmark  
 C. SPBL-L Leaves  
 D. SPBL-T Tortoise  
 E. SPBL-W Waves  
 SPBL-A Assorted (5 in 1)

### New Design Bails



- ITEM# **SILVER PLATED**  
 A. SFBS Fish  
 B. SCBS Celtic  
 C. SPBS Paw

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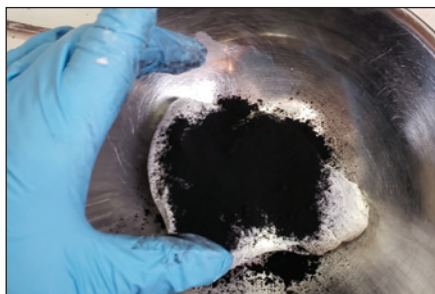
With a flux brush dipped in a small amount of flux, daub the zinc and immediately melt some solder with the iron tip to form a small bead. Let the solder cool for 30 seconds, then solder a similar bead on the lead line directly across from it. Allow the solder to cool, then solder a bridge between the two beads.

Next, solder every lead came joint. Use a light touch with the iron so as not to melt down the came. When all of the joints have been soldered, remove from the wooden jig, turn the project over, and solder the other side in the same way as the first.

**19**  
Bend some pretinned copper wire to form hooks and solder them in the top two corner joints of the frame.



**20**  
Add a heaping tablespoon of lamp black to 3/4 cup of commercial window putty and knead it in.



**21**  
Push the putty under the came on both sides of the project with your fingers or a fid.



**22**  
Patina the lead came and joints and burnish the panel, then clean to finish.



Generously sprinkle the panel with whiting (calcium carbonate) and brush vigorously with a burnishing brush until the lead is a beautiful dark gray and the solder joints are smooth. Brush off the whiting, remove any excess putty with a fid, and clean up by washing with dish soap and abundant water. **GPO**



Two decades ago, Chantal Paré quit the fast-paced world of molecular biology to devote herself to the full-time pursuit of glass. She's liable to melt it, blow it, break it, paint it, or cast it, sometimes just to show it who's boss. Nothing else comes close to creating an object through which light can pass the same way it does through water.



Lately, Chantal is concentrating her efforts in glass painting. In her free time, she also draws and self-publishes patterns in a variety of styles ranging from Victorian to geometric that are available at [www.free-stainedglasspatterns.com](http://www.free-stainedglasspatterns.com).





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# Spring Sunflower Fan Lamp

*Design, Fabrication, and Text by Alecia Richardson*



The sunflower's name comes from its tendency to reposition itself to face the sun. The sunflower's yellow color symbolizes vitality, intelligence, and happiness. The color yellow also traditionally symbolizes friendship. To me, it symbolizes new growth and the beginning of spring, when the green shoots of new life begin to evolve from the ground to produce amazing colors of the rainbow in the form of precious flowers. In this 9-1/2" x 8" design, I have incorporated Tiffany foil stained glass techniques and an outer ridge formed with hobby came.

## **Spectrum**

315.2 Medium Amber Beige for Mountains, 1/8 Sq. Ft.

96-833-91 Sky Blue/White Wispy for Sky, 1/4 Sq. Ft.

96-329.6 Dark Leaf Green for 3-D Leaves, 1/8 Sq. Ft.

## **Youghioghenny Opalescent Glass**

Y1144sp White/Green for Cactus, Scrap

Yellow for Sun, Scrap

## Tools and Materials

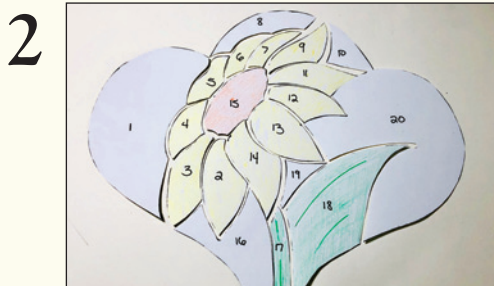
Scissors Sticker Paper Pushpins  
 Toyo Pistol Grip Cutter Running Pliers Grinder  
 Glass Saw Permanent Markers Rubbing Alcohol  
 X-Acto® Knife 7/32" Copper Foil Hobby Came  
 Nokorode® Paste Flux 60/40 Solder Fine Steel Wool  
 Hakko® Fx-601 Soldering Iron Kwik-Clean Flux Cleaner  
 Novacan Black Patina Cotton Swabs and Rounds

To begin, number the pattern pieces and make two copies of the pattern.



The copy on regular paper will be used for the layout, and the second is on a full sheet of sticker paper for adhering the pattern pieces to the glass. Coloring the pattern is optional.

Cut out the pattern pieces from the sticker paper, removing all of the black lines to ensure proper fit.



Stick the cut out pattern pieces to the glass.



I prefer sticker paper, since it tends to stay on better than when the regular paper pieces are glued onto the glass. It also helps to make a more accurate cut.

Score the glass pieces as close to the sticker paper pattern pieces as possible.



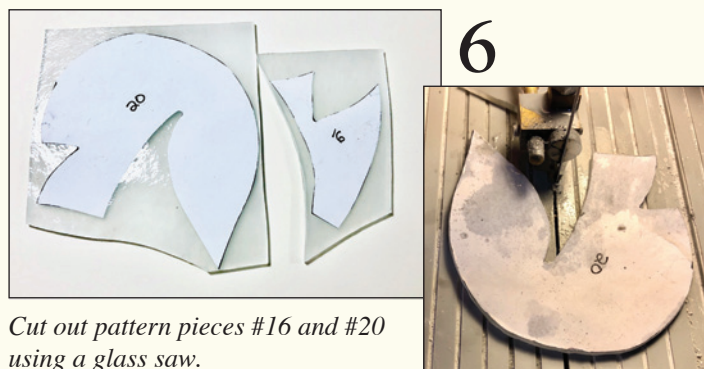
Use breaking pliers to separate the individual pieces with the exception of #16 and #20.

5



Cut out pattern pieces #16 and #20 using a glass saw.

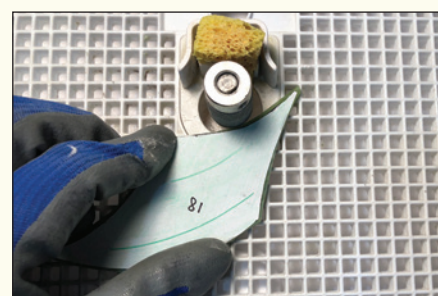
6



If you prefer, using the optional cutting lines shown on the pattern sheet for these areas of the design will allow you to cut all of the glass without using a saw.

Grind all of the pieces as closely as possible to get the best fit.

7



Assemble the glass pieces.

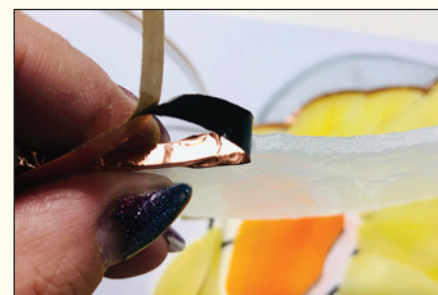
8



Remove the stickers from the glass, clean all of the glass edges with alcohol, and assemble the clean pieces on the layout copy.

Apply foil to all of the glass pieces.

9



Try to get the foil on as evenly as possible and burnish all sides of the foil. Do not foil any outside parts, since that is where the hobby came will go.

10

Reassemble the glass pieces on the layout copy.



11

Use pushpins to secure all of the glass pieces in place on the pattern, then flux and solder the glass.



12

Apply hobby came to the outside of the piece and tack-solder all of the intersecting seams.



13

Clean the glass thoroughly with Kwik-Clean, buff all of the solder with fine steel wool, and clean again.



14

Apply black patina with a toothbrush or with a cotton swab for small areas, then polish to finish.



Enjoy your beautiful new design as a year-round reminder of the wonders of springtime.

GPO

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Alecia Richardson has always loved art from a very early age. She grew up drawing, painting, and trying many different crafts before she found her muse in stained glass in 2016. A self-taught stained glass artist, Alecia draws all of her own patterns and uses "out of the box" glass techniques, specializing in copper foil overlays and hand painting on glass. To learn more about her art, please visit [www.linktr.ee/AleciaExpressions](http://www.linktr.ee/AleciaExpressions).

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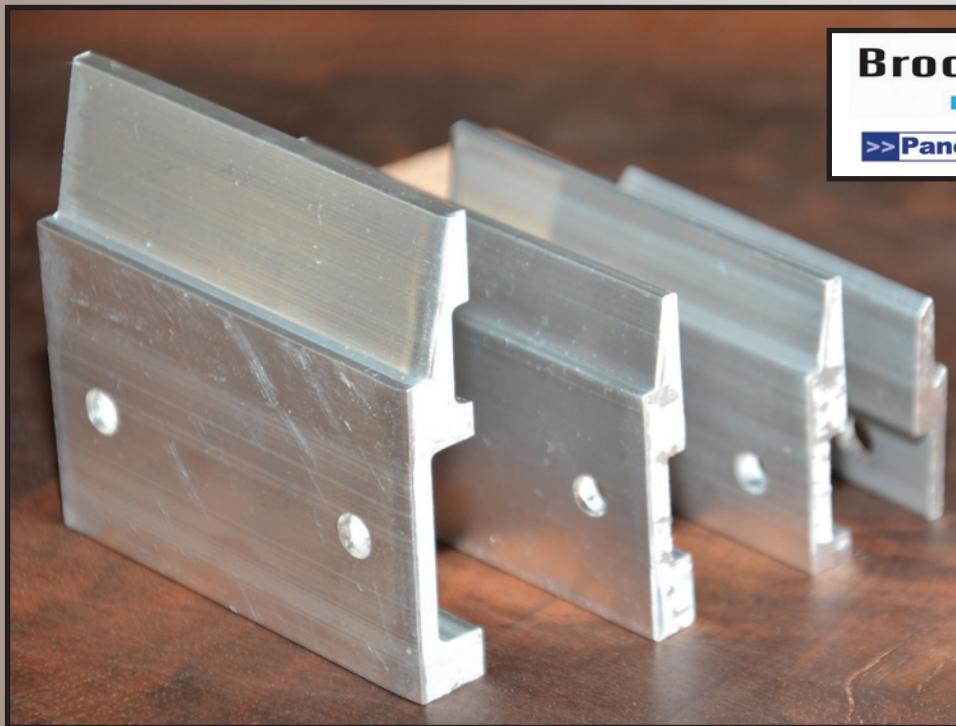
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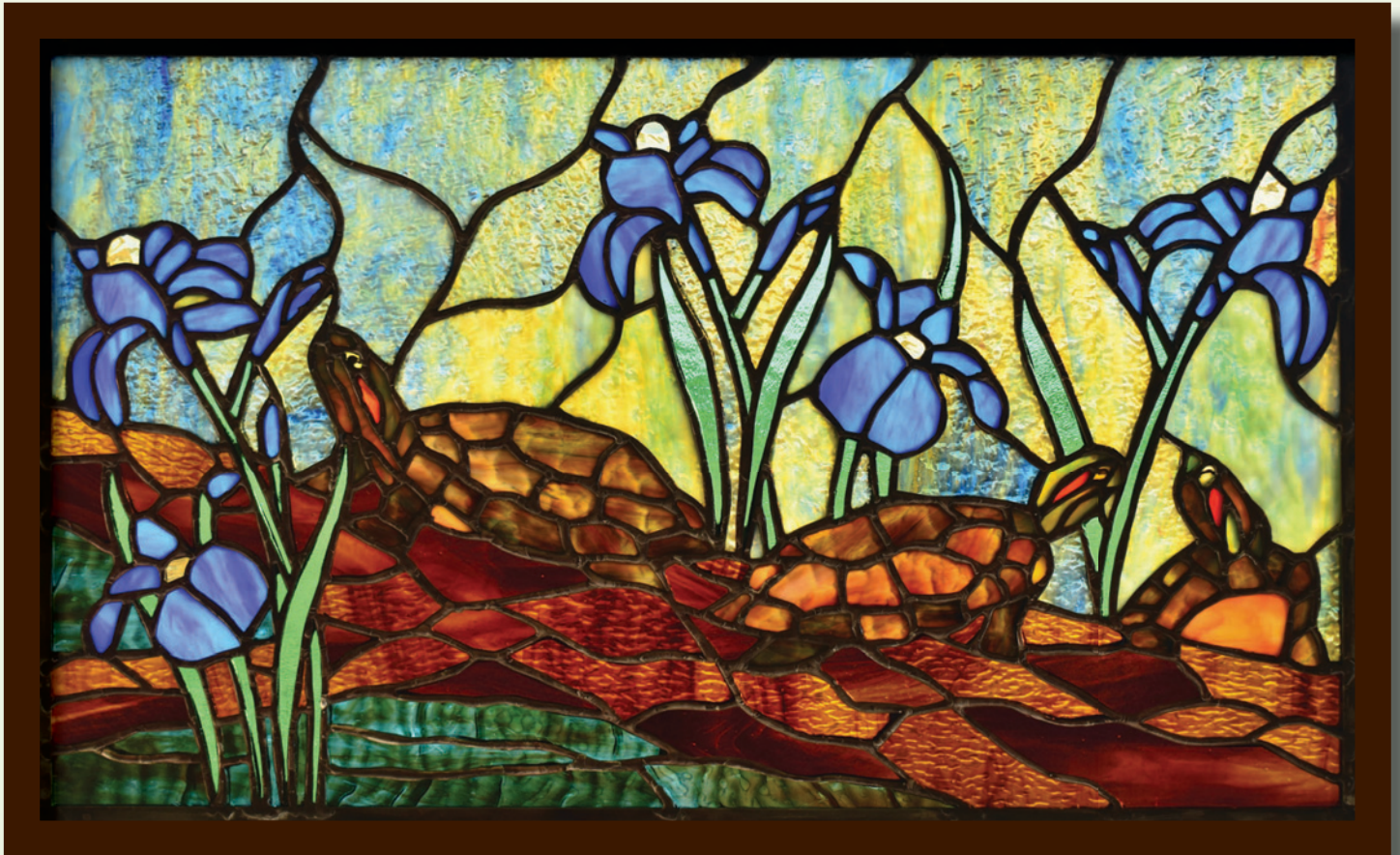
[www.panelclip.com](http://www.panelclip.com)

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# Three Box Buddies

*Design by Michal Adams, Fabrication and Text by Cindy Dow Savary*

Photography by Cindy Dow Savary and Gerry L. Savary



If you grew up in the 1950s or 1960s, you probably had a box turtle. Most of the turtles sold were red-eared sliders and were under 4 inches in length. Back then, you could purchase one for about 25 to 50 cents. The five-and-dime stores also sold accessories, including the “lagoon,” a plastic container shaped like an island with a palm tree. It had a ramp that allowed the turtle to get out of the water reservoir. Unfortunately, they did not live long, since they preferred habitats in mucky ponds with rotting logs for perches.

Eventually in 1975, the FDA banned pet stores from selling turtles less than 4 inches. It is a wonder that more kids did not contract salmonella from picking up the turtles and forgetting to wash their

hands. Today in some states, it is illegal to keep turtles in captivity. What parents once thought were “easy to care for” pets, in reality, were high maintenance. The public was just not properly informed.

Instead of a plastic island, Michal Adams has captured the box turtle in its natural habitat. In this 13" x 22-1/2" design, the artist's flowing lines and attention to detail give this pattern depth and realism. Michal created this pattern specifically for *Glass Patterns Quarterly*. If you love it like I do, she also has a larger version you can purchase that has five box turtles. You can find more of her patterns on her Facebook group page, Michal's Stained Glass Patterns, at [www.facebook.com/groups/707382752927911](http://www.facebook.com/groups/707382752927911).

### Wissmach Glass Co.

286 Medium Yellow/Green Mystic Cathedral  
for Stems and Leaves, 1/4 Sq. Ft.

199-LL Medium Amber/Dark Amber Brown Streaky  
for Log Bark, 3/4 Sq. Ft.

### Youghiogheny Opalescent Glass

Y 5691 G Amber Cathedral/Blue/Red/Green/White Textured  
Streaky for Sky, 1-1/2 Sq. Ft.

### Kokomo Opalescent Glass

KO111WAV Ruby Red/Yellow Green/Blue/Opal Wavolite  
for Turtles, 1/2 Sq. Ft.

KO4CMD Blue/White for Flowers, 1/3 Sq. Ft.

### Additional Glass

Mossy Green/Blue for Water, Scrap

Yellow for Flowers, Scrap

Red for Turtle Ears, Scrap

### Tools and Materials

Foil Pattern Scissors Toyo Pistol Grip Cutter

Grozing Pliers Running Pliers Grinder

Permanent Markers Pushpins

Paper Towels Morton Layout Block System

Rubbing Alcohol X-Acto® Knife

60/40 Solder 7/32" Black-Backed Copper Foil

Aanraku Foil Burnish Roller

Lathekin/Plastic Fid Nokorode® Paste Flux

Hakko® FX-601 Soldering Iron

Safety Glasses Kwik-Clean Flux Remover

Nitrile Gloves JAX® Pewter Black

Novacan Black Patina Cotton Rounds/Swabs

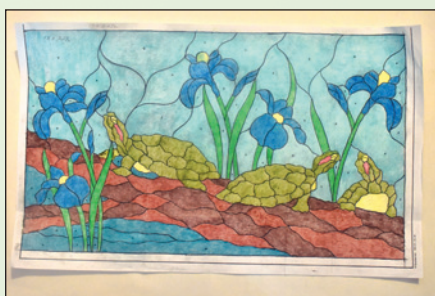
Liva Stained Glass Polish Hammer

Horseshoe Nails 1/2" Zinc U-Came

Scotch-Brite™ Pad Marabu Relief Paste

*Make two copies of the pattern, one to use as a layout pattern and the other for cutting out the pieces.*

1



I always color the pattern with colored pencils or crayons. That helps me to visualize what glass colors I want to use. It is also great for separating pattern pieces by glass color.

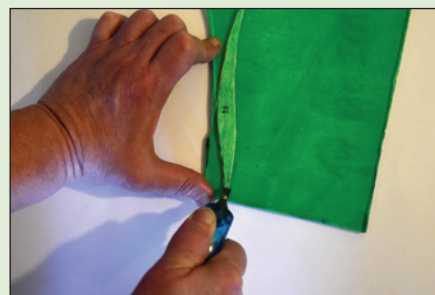
*Glue the pattern pieces to the glass.*

2



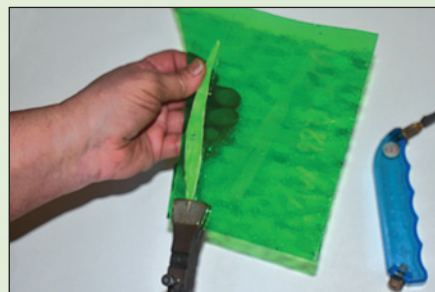
*Score as close to the pattern as possible.*

3



*Use running and grozing pliers, as needed, to separate and remove any excess glass.*

4



*Use a grinder to smooth out any rough edges.*

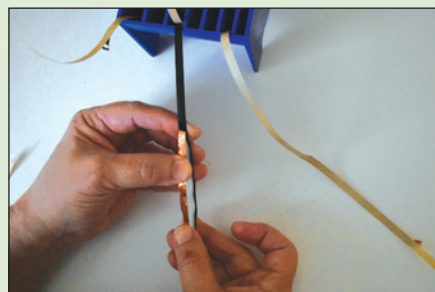
5



Some cuts will require using a 1/4" grinder head.

*Foil the glass pieces.*

6



Clean each piece with rubbing alcohol and dry, then apply the foil to all the glass pieces. I use 7/32" copper foil on glass with a regular thickness and 1/4" on thicker pieces.

*Place the foiled pieces of glass on the layout copy.*

7



I use the Morton Layout Block System to keep all the pieces in place.

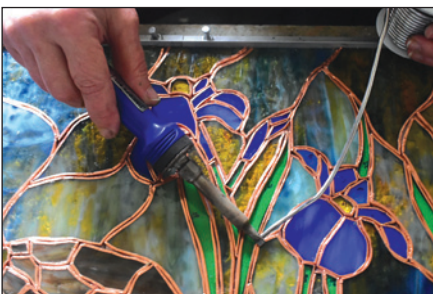
8

*Apply flux to the copper foil lines.*



9

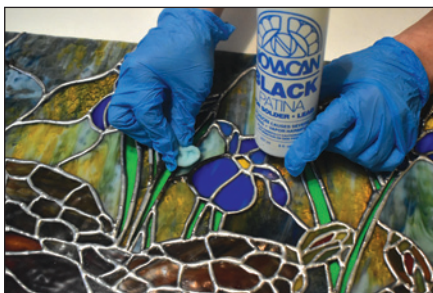
*Tack-solder each joint before running a smooth raised bead of solder on the front and back.*



Thoroughly clean the panel using Kwik-Clean to remove any residual flux.

10

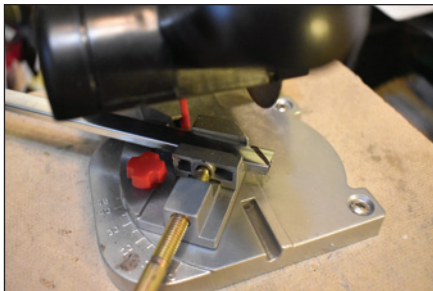
*Apply the Novocan black patina.*



Be sure to wear gloves. Afterwards, clean the piece again with Kwik-Clean Flux Remover.

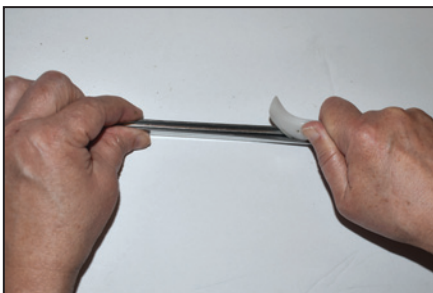
11

*Mark the direction of the cut on the zinc U-came before using the 2" cut-off saw.*



12

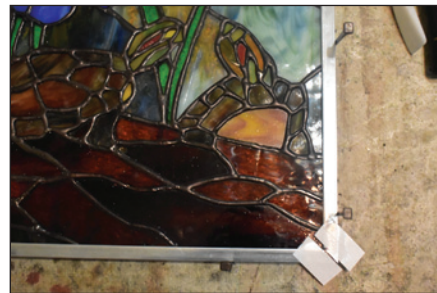
*Apply the zinc U-came.*



Use a plastic fid/Lathekin to open the channel on the zinc U-came. Secure the glass into the U-came with a hammer. In order to add Handy Hangers, cut a notch in the U-came at both ends of the top piece.

13

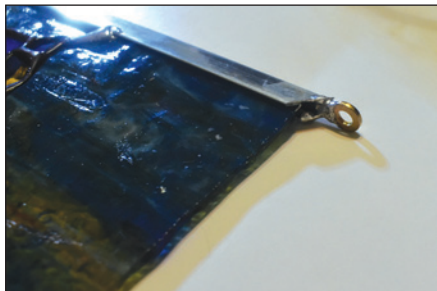
*Apply flux where the soldered lines meet the zinc U-came and solder.*



Before soldering the zinc U-came at the corners, place tape between the seams. This makes for a cleaner solder line.

14

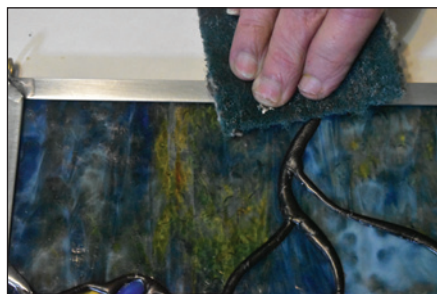
*Add the Handy Hangers and tin them with solder.*



Also apply flux and solder to the inside of the zinc U-came where the Handy Hanger will be secured. Then add the top zinc U-came with the notched ends and solder the seams.

15

*Scuff up the zinc U-came with a Scotch-Brite pad before adding JAX Pewter Black to the zinc U-came.*



16

*Polish the panel.*



Add a thin layer of Liva Stained Glass Polish and let it dry. Wipe off the polish using cotton rounds. For those hard to get to places, use cotton swabs.

17

*Use black Marabu Relief Paste to create the eyes on the turtles.*



Now it's time to find the perfect place to hang and enjoy your beautiful new panel.

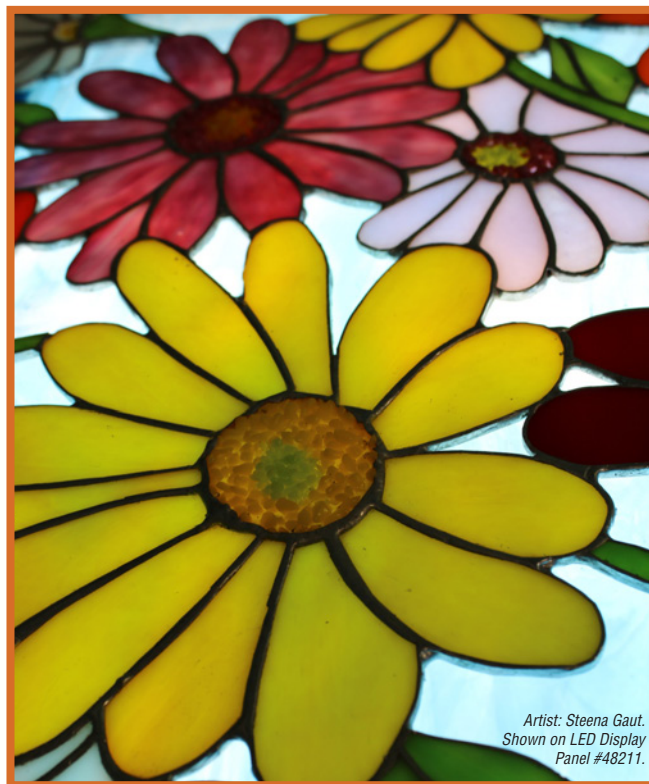
**GPQ**



# DELPHI

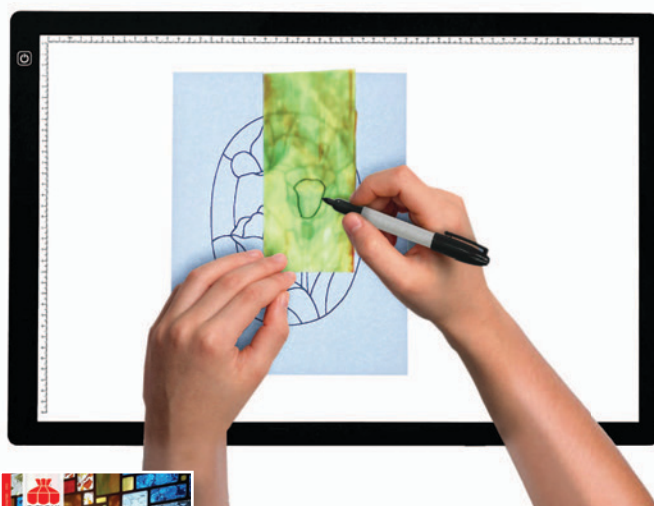
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*Michal Adams is a product of the Wooster, Ohio, K-12 schools and Ohio University in Athens, Ohio, where she completed masters degrees in Arts Education and Fine Arts. She also attended Xavier University in Cincinnati, Ohio, studying radiology, and has traveled and lived in Europe, where she expanded her artistic talents. She also studied the creation of artworks in stained glass while working in a custom framing shop.*

*The artist moved her stained glass production from her home to Michal's Framing and Art Glass, a store she founded in the early 2000s. She closed that shop to concentrate on stained glass art at her studio in Pendleton Art Center. Michal also exhibits at art fairs, including Summer Fair, Cincinnati. Visit [www.facebook.com/michalsartglass](http://www.facebook.com/michalsartglass) to learn more about the artist and her creations.*



*Cindy Dow Savary has always had a passion for art and has been a crafter all of her life.*

*After retiring in August 2017, Cindy took her first stained glass class in April 2018, and by June 2019, her work was exhibited at the City of Round Rock Texas Library. From that showing, Cindy received her first commission to repair and enlarge a piece that would become part of a new Airbnb called Annabella's Studio. The client wanted to honor the memory of her friend, the original artist.*

*Cindy has continued to create panels to honor the memories of loved ones including her mother, who died in 1959. With the help of a friend, Michal Adams, Cindy was able to create a panel after one of her mom's oil paintings, Zinnias in a Vase.*

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# Starry Night

*Design by Chantal Paré, Fabrication and Text by Cindy Dow Savary*

*Photography by Cindy Dow Savary and Gerry L. Savary*



One of the most recognized and reproduced works of art by Vincent van Gogh is *Starry Nights*. But why is that? What is the hidden meaning behind the painting? Is it one of hope or despair? After all, this was painted during a time when Van Gogh was in a mental asylum. On the other hand, biblical allegory is considered present throughout his work.

The artist was fascinated with painting night scenes. He wrote letters to his sister during that period stating that nighttime was more colorful than the day, and the stars were more than white dots against the black sky. In addition to the different colors of glass, I have also used a variety of textures to enhance the brilliance and movement of the sky. These textures are also used to depict the thick paint that Van Gogh used in his paintings.

The cypress trees to the left of the church have often been described as flame-like. Therefore, I have depicted them as such instead of using green to add an element of despair. Chantal Paré has captured the essence of his painting in creating this pattern. I have seen other patterns, but I really like this version the best.

As with every pattern, I first look to see if all the lines are cuts that I can make. I'm not a fan of small pieces, so I have enlarged the pattern to 28-1/2" x 22-1/2", which is three times the original size. Whatever changes are necessary, I always color the pattern with colored pencils or crayons. This helps me to visualize what glass colors I want to use. It's also great for separating pattern pieces by glass color.

### **Armstrong Glass Company**

AR81 Orange Opal Streaky for Flame, 1/4 Sq. Ft.

### **Bullseye Glass**

BE6264 Robin Egg Blue/Deep Royal Blue Ring Mottle for Sky, 1-1/2 Sq. Ft.

BE126-0050 Light Green for Landscape, 3/4 Sq. Ft.

BE0145-0050 Jade Green Opal Double Roll for Landscape, 1 Sq. Ft.

BE6247 Medium Leaf Green/Emerald Green Mottle for Landscape, 1/3 Sq. Ft.

### **Kokomo Opalescent Glass**

KO126LLRIP Medium Blue Opalume Brown for Landscape, 1/4 Sq. Ft.

### **Spectrum Glass**

OGT6076.83CC Inferno Pearl Opal for Flames, 1/4 Sq. Ft.

OGT6067.83CC Mimosa Pearl Opal for Flames 1/3 Sq. Ft.

OGT6051.83CCF Autumn Flame for Flames, 1/3 Sq. Ft.

OGT134H Medium Blue Hammered Transparent for Sky, 1-1/3 Sq. Ft.

### **Uroboros**

UR2092 Light Brown Ring Mottle for Landscape, Scrap

### **Wissmach Glass Co.**

WO311VG Violet Granite for Sky, 1-1/3 Sq. Ft.

### **Additional Glass Scrap**

White for Steeple and Church

Clear Textured for Stars

Brown for Church and Building Tops

Gray for Other Buildings

Pink for Rings around Stars

Brown for Housetop

Dark Orange for Flame

Clear Radium for Stars

### **Tools and Materials**

Foil Pattern Scissors Running Pliers

Toyo Pistol Grip Cutter Grinder

Grozing Pliers Alcohol Inks

Pushpins Permanent Markers

X-Acto® Knife Rubbing Alcohol

Morton Layout Block System

Paper Towels 60/40 Solder

7/32" Black-Backed Copper Foil

13/64" Black-Backed Copper Foil

1/4" Black-Backed Copper Foil

Aanraku Foil Burnish Roller

Lathekin/Plastic Fid

Nokorode® Paste Flux

Hakko® FX-601 Soldering Iron

Safety Glasses Kwik-Clean

Nitrile Gloves JAX Pewter Black

Novacan Black Patina Cotton Rounds

Cotton Swabs Liva Stained Glass Polish

Horseshoe Nails Scotch-Brite™ Pad

1/2" U-Channel Zinc Came Hammer

1

*Cut out the pattern pieces and glue them to the glass.*



2

*Score the glass as close to the pattern as possible.*



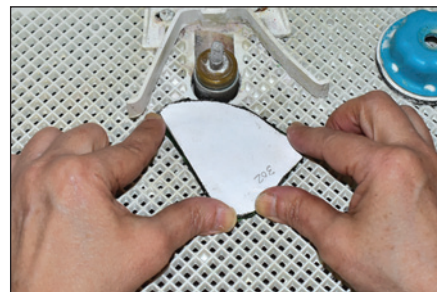
3

*Use running and grozing pliers, as needed, to separate and remove any excess glass.*



4

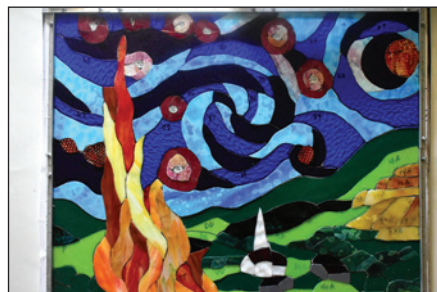
*Use a grinder to smooth out any rough edges.*



Some cuts will require using a 1/4" grinder head.

5

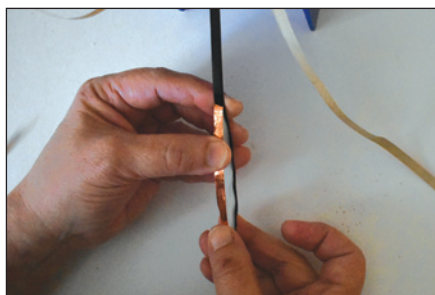
*Place the pieces of glass on the layout copy.*



I use the Morton Layout System to keep all of the pieces in place.

6

*Clean and foil the glass pieces.*



Before foiling, clean each piece with rubbing alcohol and dry. Apply the foil to all of the glass pieces. I use 7/32" or 1/4" foil on the thicker/bigger glass pieces and 13/64" foil on smaller/thinner glass pieces. For those pieces with inside curves, first place several pieces of foil on the curve, then foil on the edge as normal.

7

*Flux the foil, then tack-solder the joints.*



Apply flux to the copper foil lines. Tack-solder each joint before running a smooth, raised bead of solder on the front and back.

8

*Thoroughly clean the panel using Kwik-Clean to remove any residual flux.*



9

*Apply the Novocan black patina.*



Be sure to wear gloves. Afterwards, clean the piece again with Kwik-Clean.

10

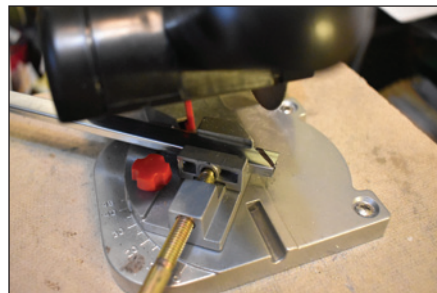
*Polish the panel.*



Add a thin layer of Liva Stained Glass Polish and let it dry. Wipe off the panel using cotton rounds. For those hard to get places, use cotton swabs.

11

*Mark the direction of the cut on the U-channel zinc came before using the 2" cut-off saw.*



12

*Use a plastic fid/lathekin to open up the channel on the U-channel zinc came.*



13

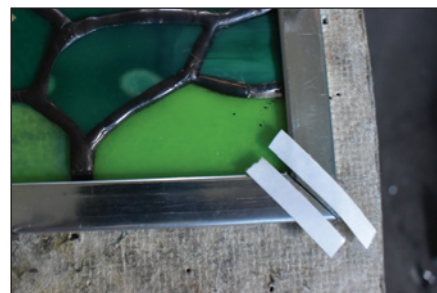
*Use a hammer to secure the glass into the U-channel zinc came.*



In order to add the Handy Hangers later, cut a notch in the U-channel zinc came at both ends of the top piece.

14

*Apply flux where the soldered lines meet the U-channel zinc came and solder.*



Before soldering the U-channel zinc came at the corners, place tape between the seams. This makes for a cleaner solder line.

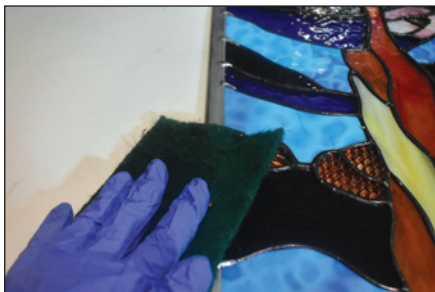
15

*Add the Handy Hangers.*



Tin the Handy Hangers with solder. Also apply flux and solder to the inside of the U-channel zinc came where the Handy Hangers will be secured. Finally, add the top U-channel zinc came with notched ends and solder the seams.

16  
Scuff up the U-channel zinc came with a Scotch-Brite pad before adding JAX Pewter Black to the came.



All that's left is to hang your *Starry Night* panel in a special place where everyone can enjoy your unique glass art. **GPQ**

*Cindy Dow Savary has always had a passion for art and has been a crafter all of her life. After retiring in August 2017, Cindy took her first stained glass class in April 2018, and by June 2019, her work was exhibited at the City of Round Rock Texas Library.*



*From that showing, the artist received her first commission to repair a piece that would become part of a new Airbnb called Annabella's Studio. The client wanted to honor the memory of her friend, the original artist. Since then, Cindy has continued to create panels to honor the memories of loved ones including her mother, who died in 1959. With the help of a friend, Michal Adams, Cindy was able to create a panel after one of her mom's oil paintings, Zinnias in a Vase.*

*Two decades ago, Chantal Paré quit the fast-paced world of molecular biology to devote herself to the full-time pursuit of glass. She's liable to melt it, blow it, break it, paint it, or cast it, sometimes just to show it who's boss. Nothing else comes close to creating an object through which light can pass the same way it does through water.*



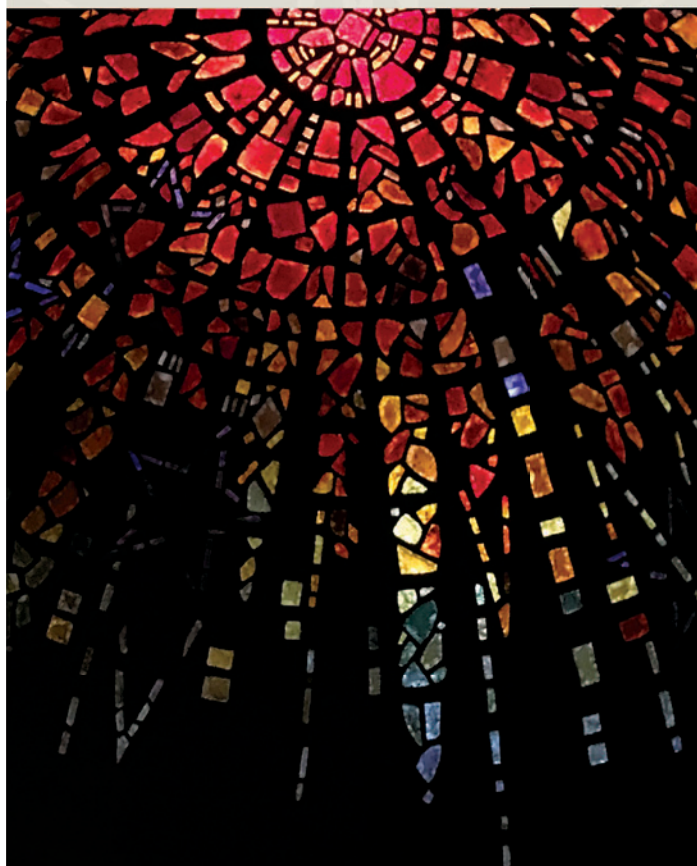
*Lately, Chantal is concentrating her efforts in glass painting. In her free time, she also draws and self-publishes patterns in a variety of styles ranging from Victorian to geometric that are available at [www.free-stainedglasspatterns.com](http://www.free-stainedglasspatterns.com).*



## Saving Sacred Places' Stained Glass

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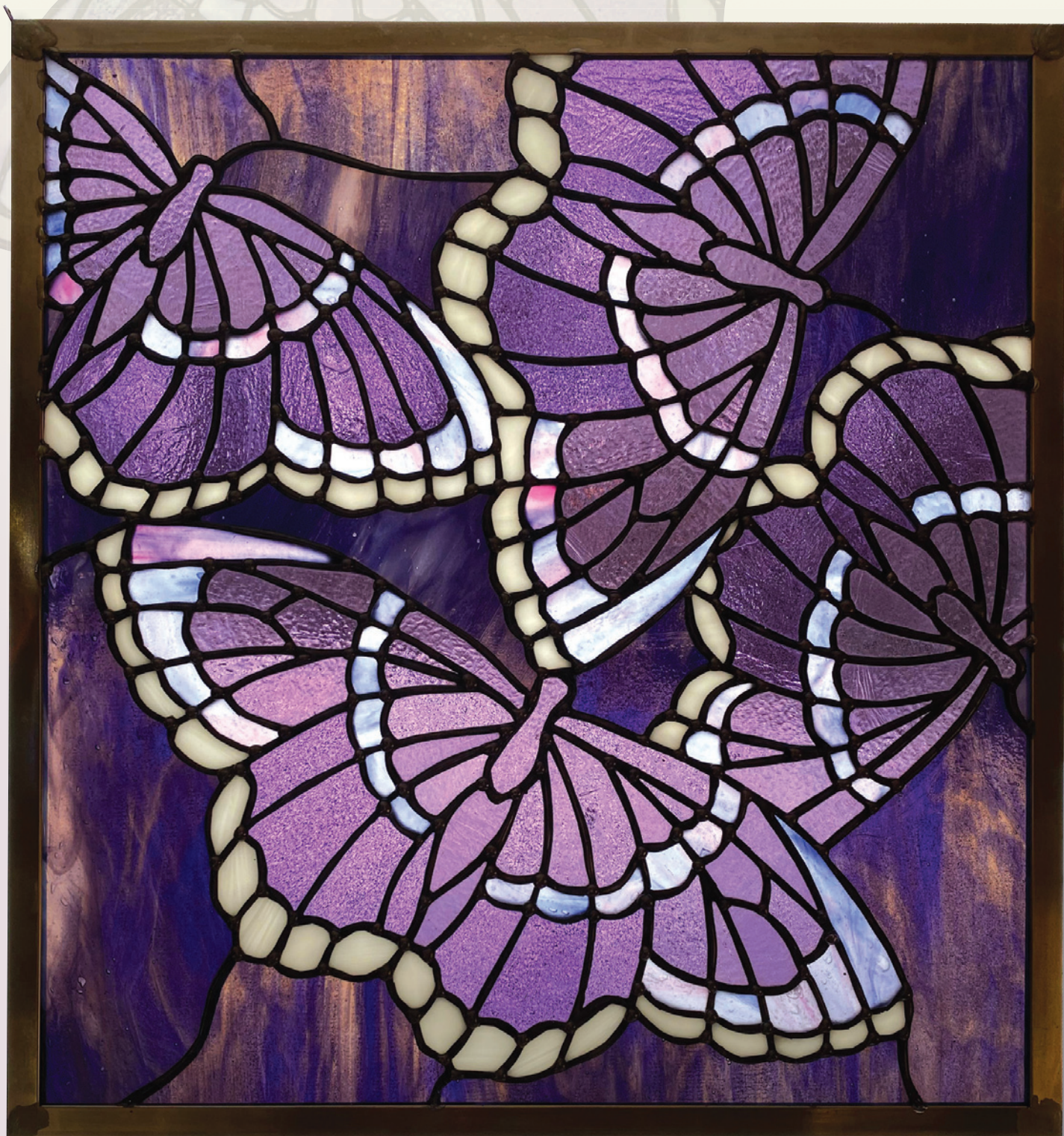
[stainedglass.org](http://stainedglass.org)



# Dancing Butterflies

*Design by Kat Patrick, Fabrication and Text by Carrie Deutsch*

Photographs by Carrie and Mike Deutsch



I have always been intrigued by butterflies. I can remember chasing them across the fields in the spring and summer, holding out my hand to see if they would land on it. I can remember closing my eyes and being very still waiting for the soft tickle that I would feel when they landed on my hand.

In Native American culture, butterflies represent color—bright, vibrant color, as with glass. They represent happiness and change. Certain tribes consider them a symbol of joy, others a symbol of their dreams, while some consider it a medium of communication from lost loved ones.

When I saw this beautiful 16" x 17" pattern, my mind immediately went to my happy world of color. I love laying out the glass sheets so I can see how they will blend together. In my head is a color wheel, and once I find the right combination I'm ready to start. In this piece, it did help that my favorite color is purple!

### Oceanside Glass 96 COE

O307S Clear/White Cloud, Scrap

### Youghiogheny Opalescent Glass

Y96-3001MF Iris Fields 96 COE, 2/3 Sq. Ft.

360F Violet Cathedral 96 COE, Scrap

YGN367SP Neodymium/Dark Purple/Blue/

Pink Stipple, Scrap

### Bullseye Glass Co.

112831 Deep Royal Purple Irid 90 COE, 1/2 Sq. Ft.

### Tools and Materials

Foil Pattern Sheers Cutters Mate Glass Cutter

Grozing Pliers Running Pliers

Grinder Morton Layout Block System

Pushpins Paper Towel X-Acto® Knife

7/32" and 3/16" Black-Backed Copper Foil

Foil Burnisher/Fid Classic 100 Gel Flux

60/40 Solder Hakko® FX-601 Soldering Iron

Kwik-Clean Flux Cleaner Nitrile Gloves

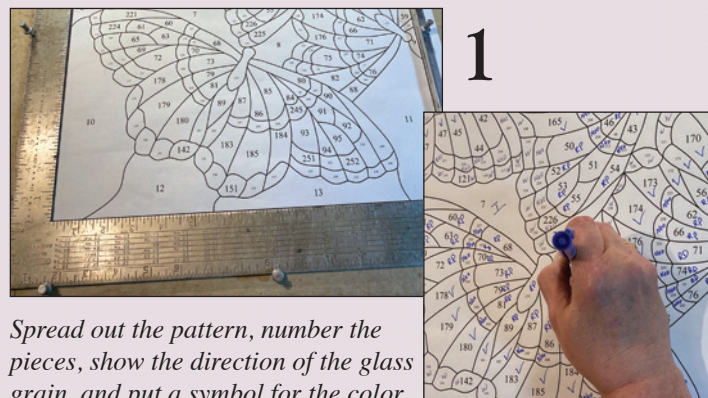
Novacan Black Patina Cotton Swabs Soft Rags

Small Plastic Cup Spray Bottle with Water

3/4" Brass U-Came Plastic Scrubby

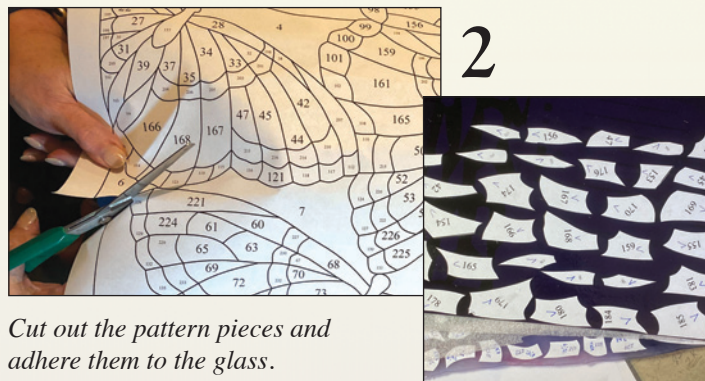
Toothbrush Fingernail Brush

Mothers Carnuba Wax Clarity Polish



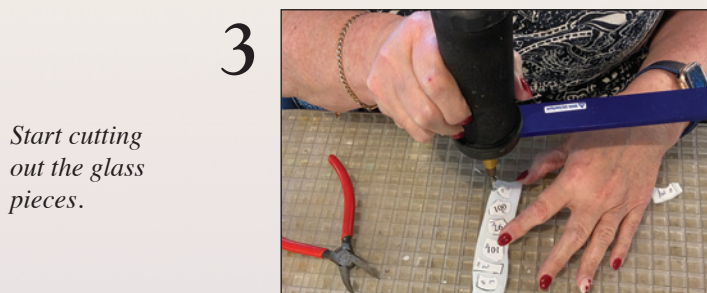
Spread out the pattern, number the pieces, show the direction of the glass grain, and put a symbol for the color.

You'll need two copies of the pattern, one to cut apart and one for assembling the glass pieces. This pattern was already numbered, so all I needed to do was indicate what color and the direction of the grain.



Cut out the pattern pieces and adhere them to the glass.

We all have our way of doing this. The way I was taught years and years ago was to cut the pattern and glue the pieces to the glass. I use pattern shears, which allow the space needed, so as to avoid the pattern growing after the pieces have been foiled.



Start cutting out the glass pieces.

I have several cutters I use including a Toyo Pistol Grip cutter as well as the pencil grip cutter. I also use my Cutters Mate system as much as I can, which helps those arthritic hands. When cutting, I always get as close to the paper edge as possible to cut down on how much grinding needs to be done.



Use the running pliers and grozing pliers to break out the scored glass pieces.



Grind the glass pieces as needed.



If I have done a good job cutting, then there really isn't a lot to grind. I always run pieces across the grinder, though, to make sure I don't have any "ouch-gottcha's" to deal with. I have two grinders that I use, the small Gryphonette with the 1/4" bit and The Grinder, which usually has the 1" bit.



Assemble the glass pieces together.

6



I place the ground, cleaned pieces on my pattern as I go to see how they are fitting. If any adjustments need to be made, I can make them then before moving on. I normally use the Morton Layout System depending on the size of the piece, but anything can be used—yardsticks, carpenter squares, rulers, etc.—to help make sure that the panel is square.

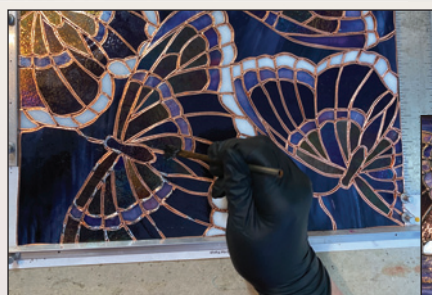


Foil the glass pieces.

7



Make sure that all of the glass pieces are clean. I foil using a variety of foil sizes—7/32", 3/16", and 5/32"—depending on the thickness of the glass. The object is to have nice, narrow foil lines. For deep curves, I have found that if I warm the foil up by running my fingers over it a few times, it will generally smooth out nicely. If the foil splits, use some foil over the split and trim off any excess.



Flux the foil lines, tack-solder the joints, and finish-solder with a nice rounded bead.

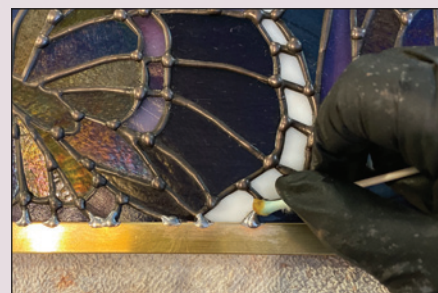
8



Always do a check before you start soldering to make sure there are no tags showing in the foil and trim those off if there are any. I use Classic Gel Flux and whatever solder I can get at the best price.

Tack-solder the joints, then begin running a nice, rounded bead. Once you are done soldering the first side, clean off all of the flux residue using the Kwik-Clean Flux Remover. Then flip the piece over and solder the back side. Both sides of my panels have nice, rounded beads so that they look nice from either side.

9



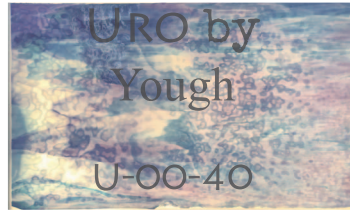
Patina the solder lines, then wax the panel.

Once you have cleaned the panel to remove any residue of flux, you can apply the patina. On this piece I used Black Novacan patina that I put in a small plastic cup. Using a toothbrush or cotton swab, I apply it to the solder lines. Do the same to the back side.

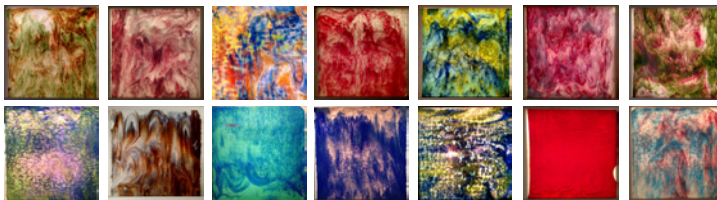
Once I've covered all the lines, I wipe off any excess with a paper towel. I then use a squirt bottle of water to spray down both sides and pat dry.



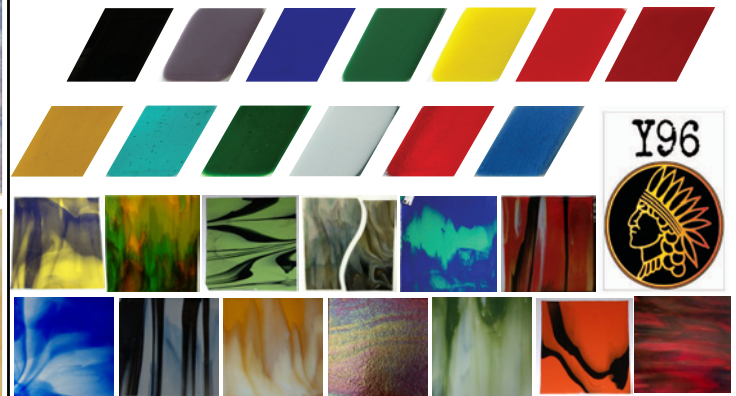
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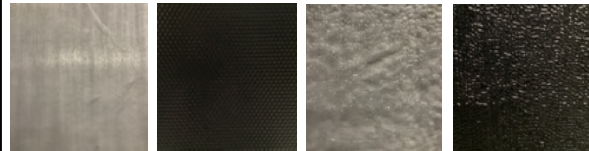


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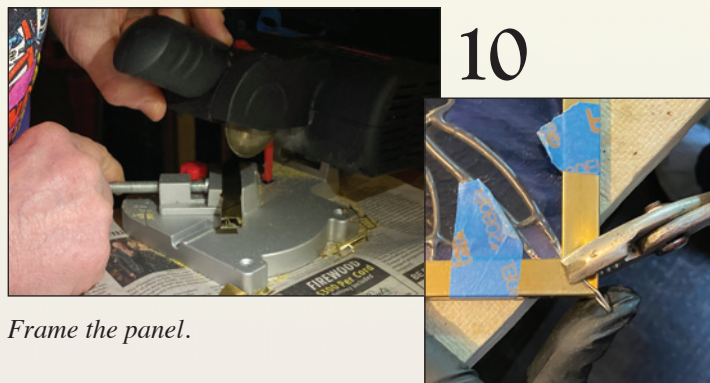
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To wax the panel, I use Mother's Carnuba Wax on my pieces. Once the panel is dry, I use a soft rag made from a cut up T-shirt and put the wax on my panel and do not wait for the wax to dry before I use another soft rag to buff it up. I continue to buff until I do not see any more black coming off on my rag. To remove any dried wax in tiny crevices, I use a fingernail brush.



Frame the panel.

I used 3/4" brass came for this piece. My husband is the pro at this, so I give him the panel and he gets the frame cut. We use a cut-off saw to cut the came.

Once the frame has been taped on, I solder the 4 main corners and use wire in the top corners to make a loop to attach the chain for hanging. This is easily done by laying wire along the joint line before soldering the corners.

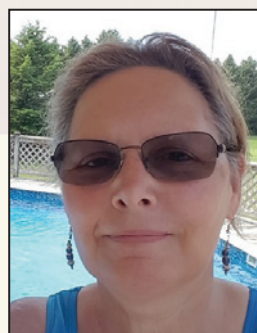
I also take the time to attach the panel to the frame wherever there is a solder line that extends to the frame. Once that is done, I clean it up again, touch up the patina if needed, and use Clarity Polish to give it the final polishing. Make sure to polish the frame as well.

**GPO**



*Carrie Deutsch has always had a passion for color and has been a crafter all her life. After her father died in 1986, she looked for something she could immerse herself in to take her mind off of her loss. In this search, she stumbled into a stained glass shop in Cary, North Carolina, and fell into the proverbial rabbit hole of stained glass. She took a class and never looked back.*

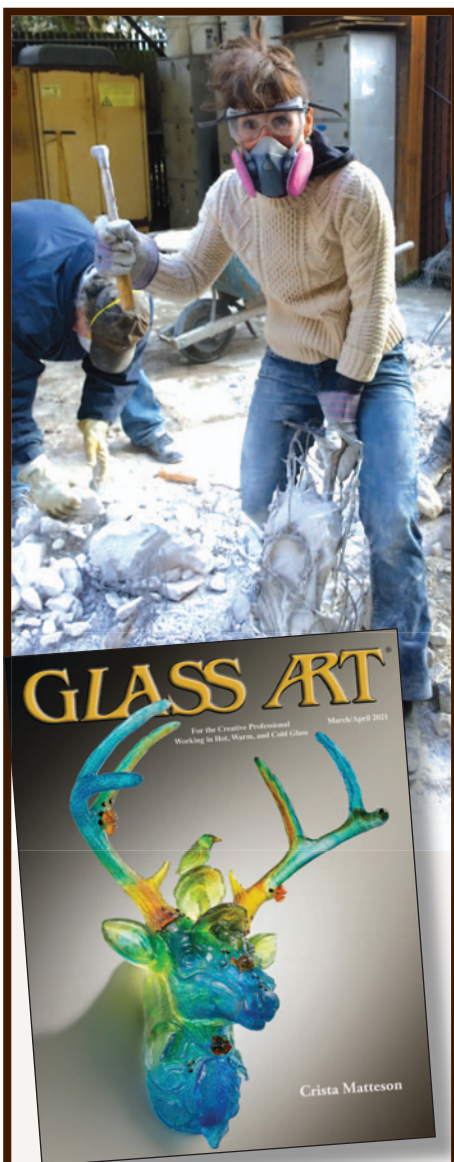
*Carrie has been creating stained glass items for close to 30 years. She has often said that the world goes away when she is creating a glass item. Her focus is entirely on the glass, textures, colors, and how they all blend together.*



*Kat Patrick has been creating glass art for over 30 years and started out working with Heart Stained Glass. The patterns Kat creates are so realistic and full of life. She has the ability to take the most rudimentary drawings and create magical works of art. You can find more about Kat and how to purchase her stained glass patterns on Facebook at Katz Creations in Stained Glass.*



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Don't miss the March/April 2021 issue of *Glass Art*® where you'll meet glass casting artist Crista Matteson, architectural glass artist Wayne Cain, and contemporary jewelry artist Don Friedlich. The benefits of production work, a new method for printmaking with glass powders, and the latest industry news round out this terrific issue.

On the cover:  
Crista Matteson, Forest Watcher.  
Photo by Daniel Fox.

Above: Crista Matteson  
divesting a bronze casting.  
Photo by Nancy Bocek.

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# Morning Iris

*Design by Aanraku Glass Studios, First Rendering by Saul Labovitz, Text by Darlene Welch*

The iris is a favorite perennial of many gardening enthusiasts who look forward to their return every spring. This 24" x 16" stained glass design from *Aanraku Eclectic VII: From the Original Collection Volume 7* by Hiroyuki Kobayashi and Jeffrey Castaline provides the perfect way to celebrate their distinctive beauty all year long.

Irises come in a large variety of colors, so feel free to get creative by changing the blooms to your own favorite color. As you prepare the glass for cutting, carefully matching the glass grains and colors to the direction of the pattern pieces will help to give your project more depth and realism.

This 32-page stained glass pattern collection includes nine different scenes, all including various flowering trees and plants. Visit Aanraku Glass Studios at [www.aanraku.com](http://www.aanraku.com) to view the company's complete selection of pattern books and learn more about Aanraku's Custom Pattern and Design Service.

**GPO**



## **Wissmach Glass Co.**

57-D Medium Green/Dense Opal/Crystal for Leaves, 2 Sq. Ft.

WO-701 Medium Purple/Dark Purple/White Opal Mystic Wissy for Flower, 1 Sq. Ft.

1-L Silver Yellow/Light Opal/Crystal for Flower Centers, Scrap

562-D Dense Opal/Steel Blue for Background, 3 Sq. Ft.

## **Tools and Materials**

7/32" Copper Foil Flux Solder

Black Patina 1/2" U-Channel Zinc

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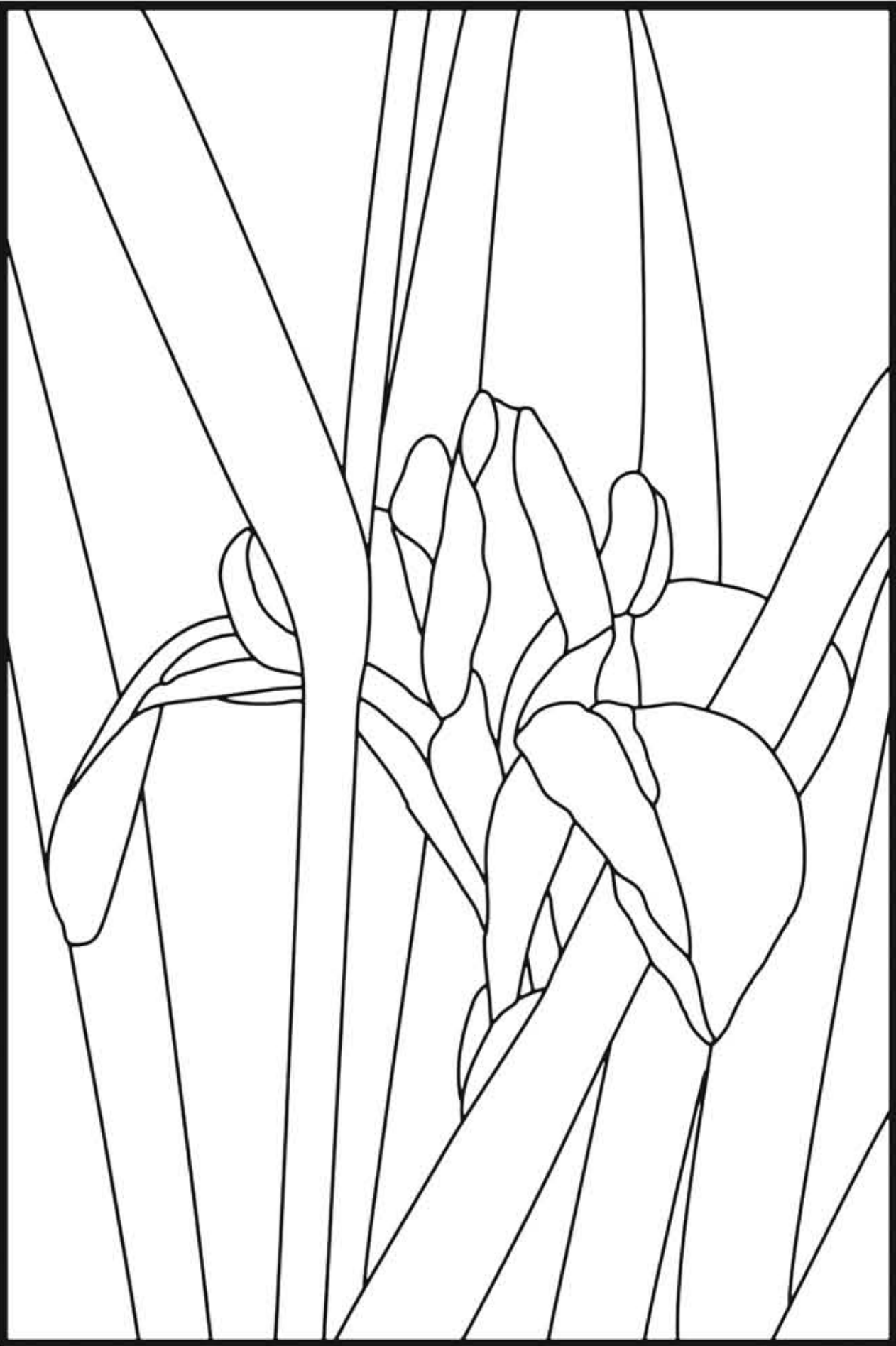


## Morning Iris

Design by Aanraku Glass Studios  
First Rendering by Saul Labovitz

**Wissmach Glass Co.**  
57-D Medium Green/Dense Opal/Crystal for Leaves, 2 Sq. Ft.  
WO-701 Medium Purple/Dark Purple/White Opal Mystic Wispy for Flower, 1 Sq. Ft.  
1-L Silver Yellow/Light Opal/Crystal for Flower Centers, Scrap  
562-D Dense Opal/Steel Blue for Background, 3 Sq. Ft.

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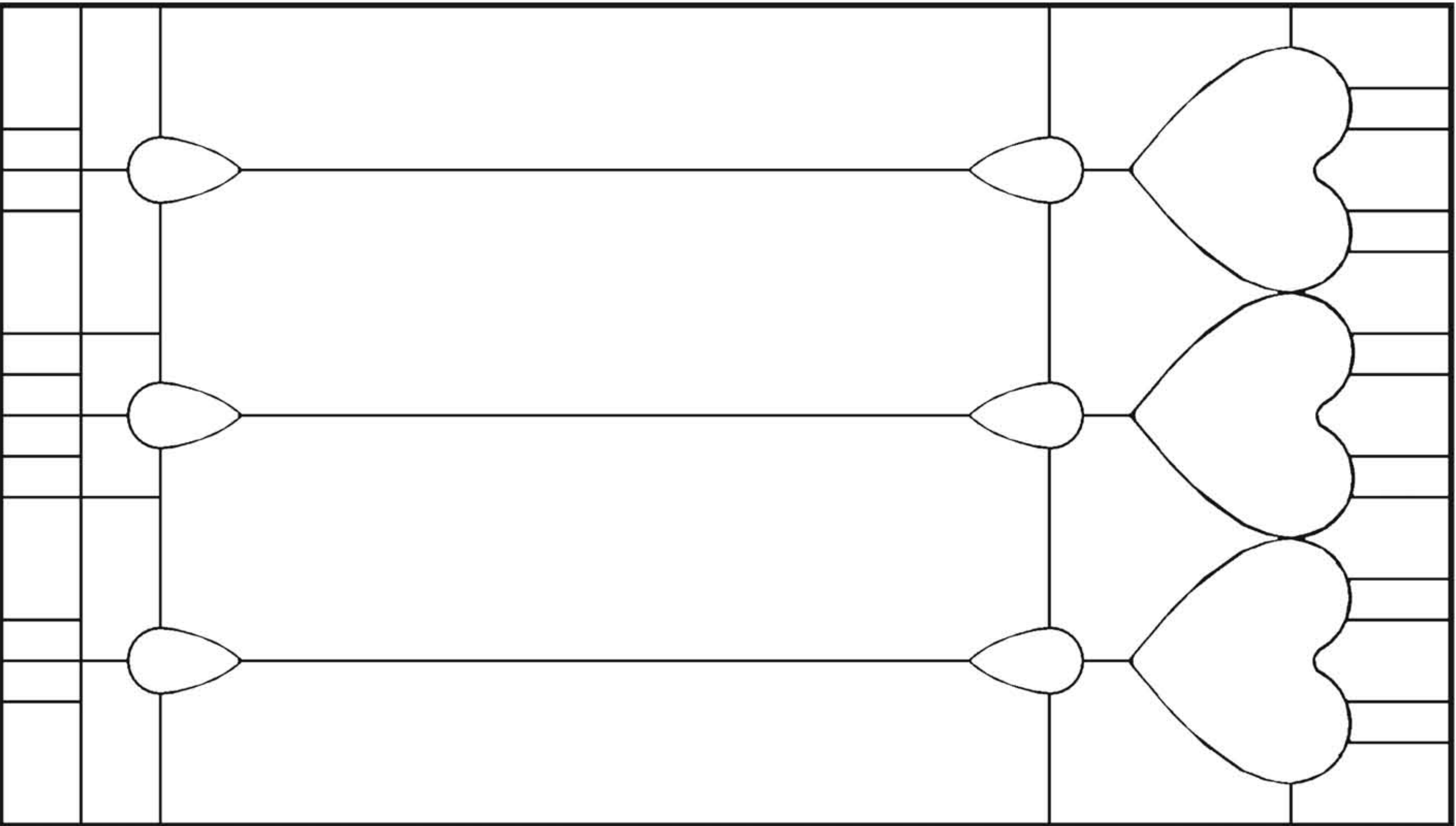


## Spring Sunflower Fan Lamp

Design by Alecia Richardson

**Spectrum**  
315.2 Medium Amber Beige for Mountains, 1/8 Sq. Ft.  
96-833-91 Sky Blue/White Wispy for Sky, 1/4 Sq. Ft.  
96-329.6 Dark Leaf Green for 3-D Leaves, 1/8 Sq. Ft.

**Youghiogheny Opalescent Glass**  
Y1144sp White/Green for Cactus, Scrap  
Yellow for Sun, Scrap



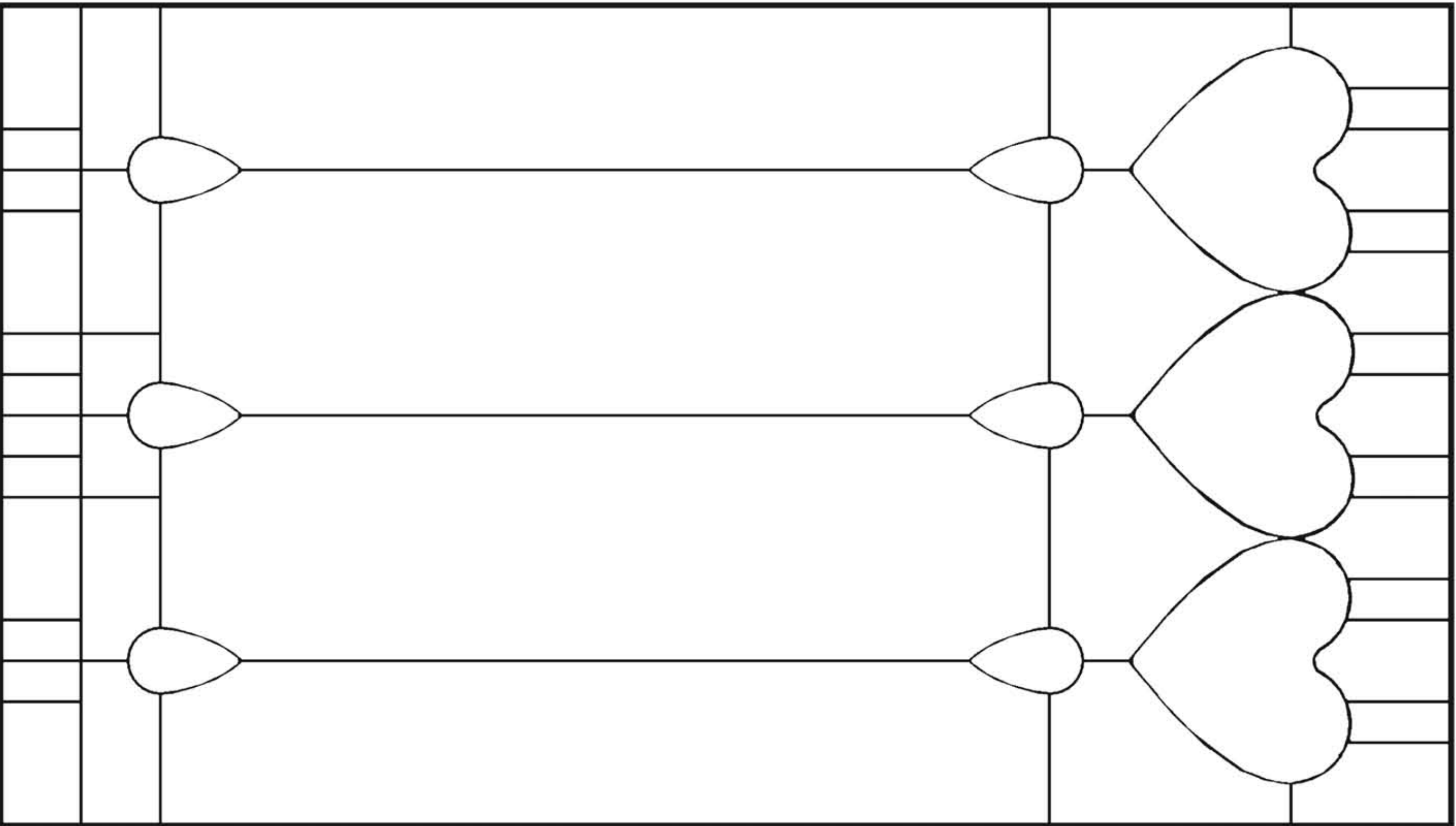
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## Amsterdam School Hearts

Design by Chantal Porté

**Youghiogheny Opalescent Glass**  
Oceanic 605 White on Dark Red for Hearts and Accents, 10 Sq. Ft.  
**Wissmach Glass Co.**  
Seedy-01 Clear Seedy for Background, 1-1/2 Sq. Ft.  
Clear Ceres for Background, 1/2 Sq. Ft.  
Hammered-01 Clear Hammered for Background, 1 Sq. Ft.  
**Additional Glass**  
3 mm Clear Float Glass, 4 Sq. Ft.

Enlarge to desired size



Enlarge to desired size

## Have a Heart An Introduction to Stained Glass

Design by Leslie Gibbs

**Bullseye Glass Co.**  
001122 Red Iridescent for Larger Heart, 4" x 8"  
001831 Ruby Pink for Smaller Heart, 3" x 4"  
001442 Neo-Lavender for Diamond Shaped Gem, Scrap



Enlarge to desired size

## Day Lilies

Design by Paned Expressions Studios

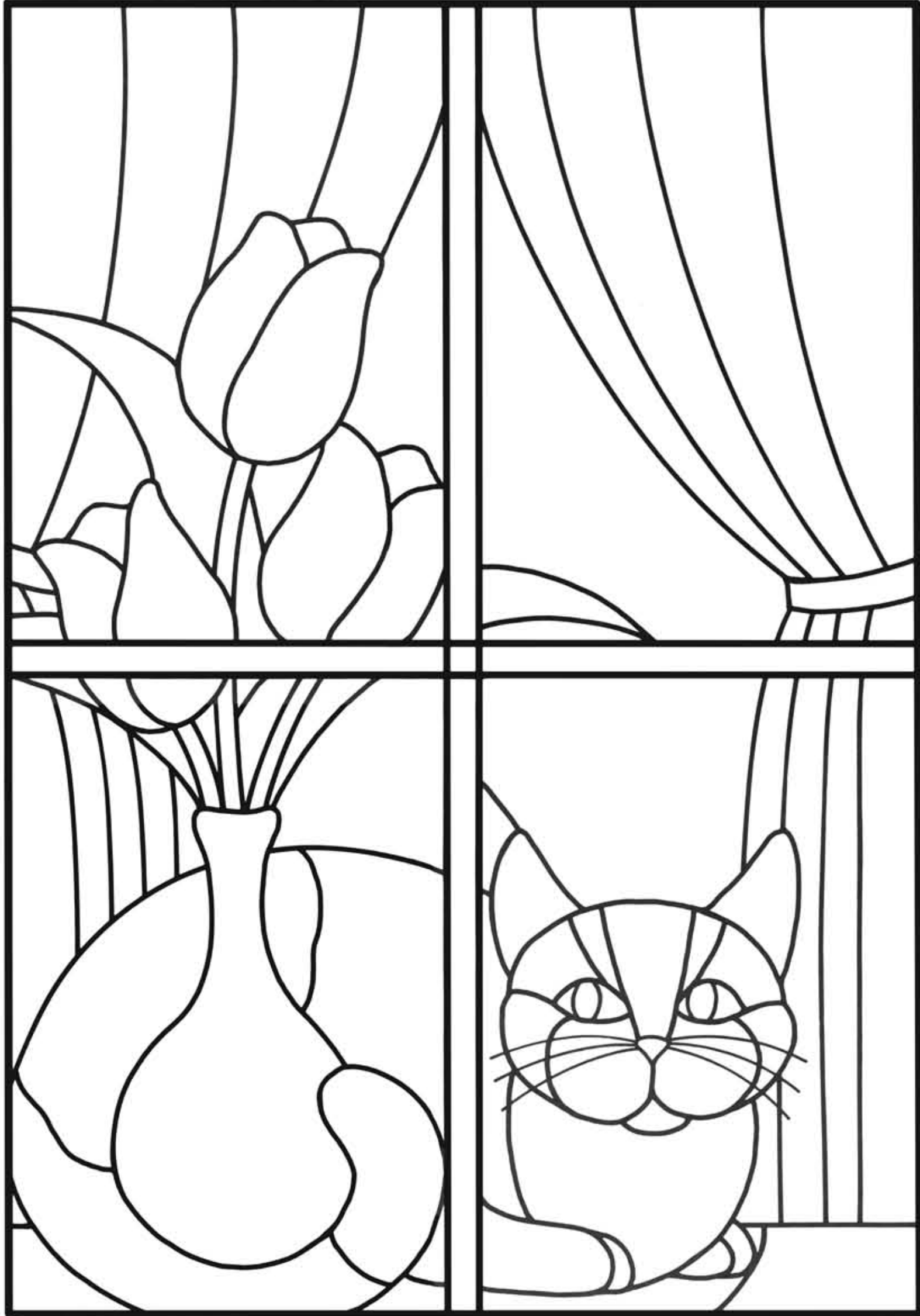
**Wissmach Glass Co.**  
WO-17 White Opal/Red/Orange Wispy for Flowers, 1 Sq. Ft.  
57-L Medium Green/Light Opal/Crystal for Flower Buds, Scrap  
23-L Light Green Light Opal/Copper Red for Leaves, 1 Sq. Ft.  
101-L Dark Green/Light Opal/Crystal for Stem, Scrap  
325-D Light Amber/Dense Opal/Crystal for Background, 4 Sq. Ft.  
178-D Medium Amber/Sky Blue/Dense Opal/Crystal for Border, 4 Sq. Ft.



Dancing Butterflies

Design by Kat Patrick

Oceanside Glass 96 COE  
O307S Clear/White Cloud, Scrap  
Youghiogheny Opalescent Glass  
Y96-3001MF Iris Fields 96 COE, 2/3 Sq. Ft.  
360F Violet Cathedral 96 COE, Scrap  
YGN367SP Neodymium/Dark Purple/Blue/  
Pink Stipple, Scrap  
Bullseye Glass Co.  
I12831 Deep Royal Purple Irid 90 COE, 1/2 Sq. Ft.



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Whiskers

Design by Terra Parma

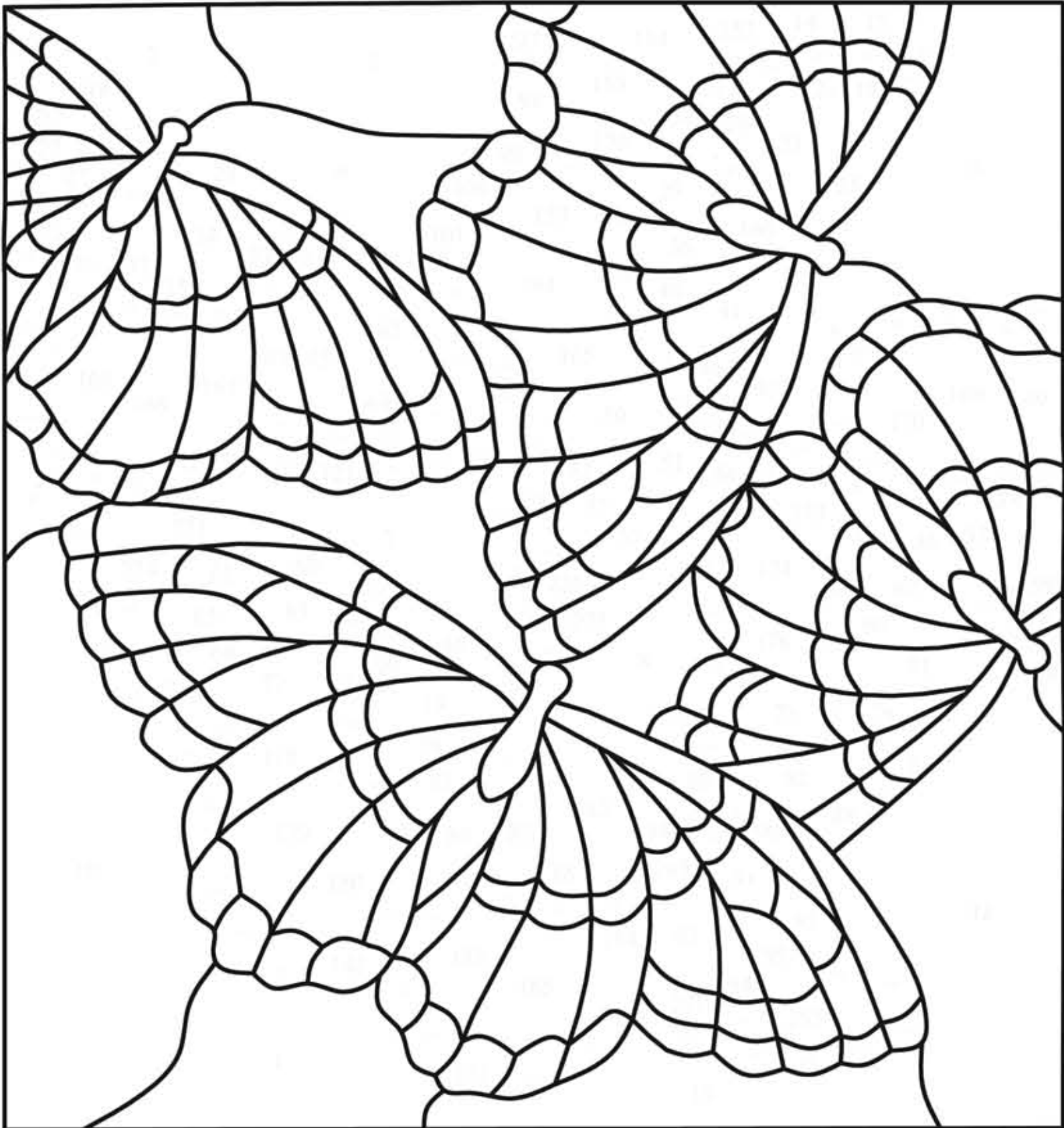
Wissmach Glass Co.  
27-LL Orange/Opal/Crystal Streaky for Flowers, 1 Sq. Ft.  
100-SP Dark Green/Opal for Leaves and Stems, 1 Sq. Ft.  
275-L Dark Purple/Yellow Green/Medium Blue/Light Opal for Vase, 1/2 Sq. Ft.  
155-LL Dark Purple/Green/Light Opal/Crystal Streaky for Window Frame, Scrap  
145-SP Dark Amber/Opal/Crystal for Cat, 2 Sq. Ft.  
55-L Amber/Green/Light Opal/Crystal for Cat Face, Ears, and Tip of Tail, Scrap  
266-L Light Mauve/Light Opal for Nose, Scrap  
WO-112 Dark Green/Dark Amber/Opal Wissy for Eyes, Scrap  
325-D Light Amber/Dense Opal/Crystal for Curtains and Eyes, 4 Sq. Ft.  
178-D Medium Amber/Sky Blue/Dense Opal/Crystal for Background, 3 Sq. Ft.

I Love Frogs

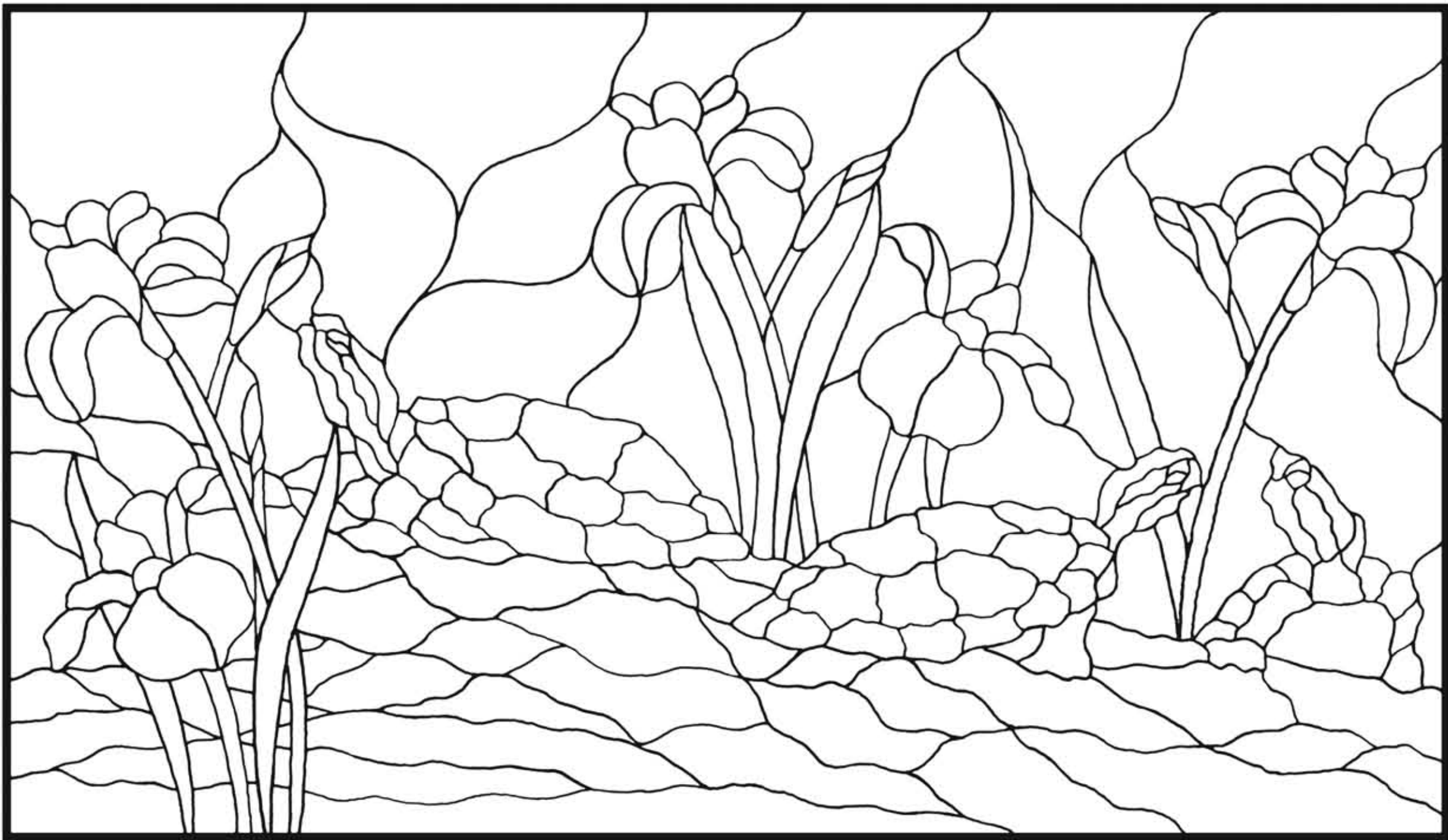
Proclaiming a Passion  
Capture Your Favorite  
Things in Glass

Design by Robin Anderson

96 COE Glass Powder and Fine Frit  
Dark Green Opal and Transparent  
Olive Green Opal and Transparent  
Marigold Opal Orange Opal Dark Red Opal  
Chestnut Opal Flame Opal Turquoise Green Opal  
Red Opal Yellow Transparent Clear Fine  
Spectrum OpalArt™ Sheet Glass  
OA/325-52SF Sour Apple, Scrap



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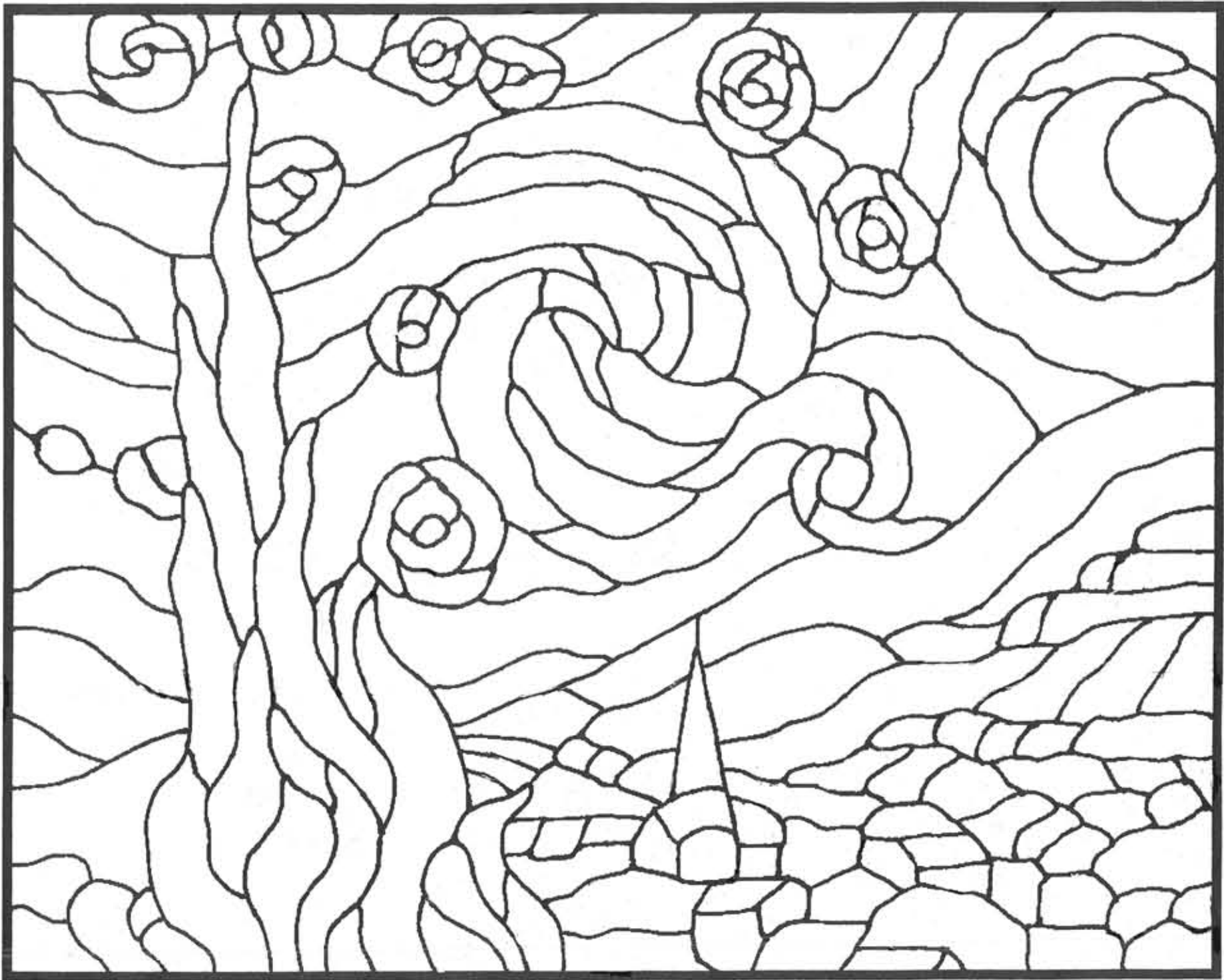


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Three Box Buddies

Design by Michal Adams

Wissmach Glass Co.  
286 Medium Yellow/Green Mystic Cathedral  
for Stems and Leaves, 1/4 Sq. Ft.  
199-LL Medium Amber/Dark Amber Brown Streaky  
for Log Bark, 3/4 Sq. Ft.  
Youghiogheny Opalescent Glass  
Y 5691 G Amber Cathedral/Blue/Red/Green/White Textured  
Streaky for Sky, 1-1/2 Sq. Ft.



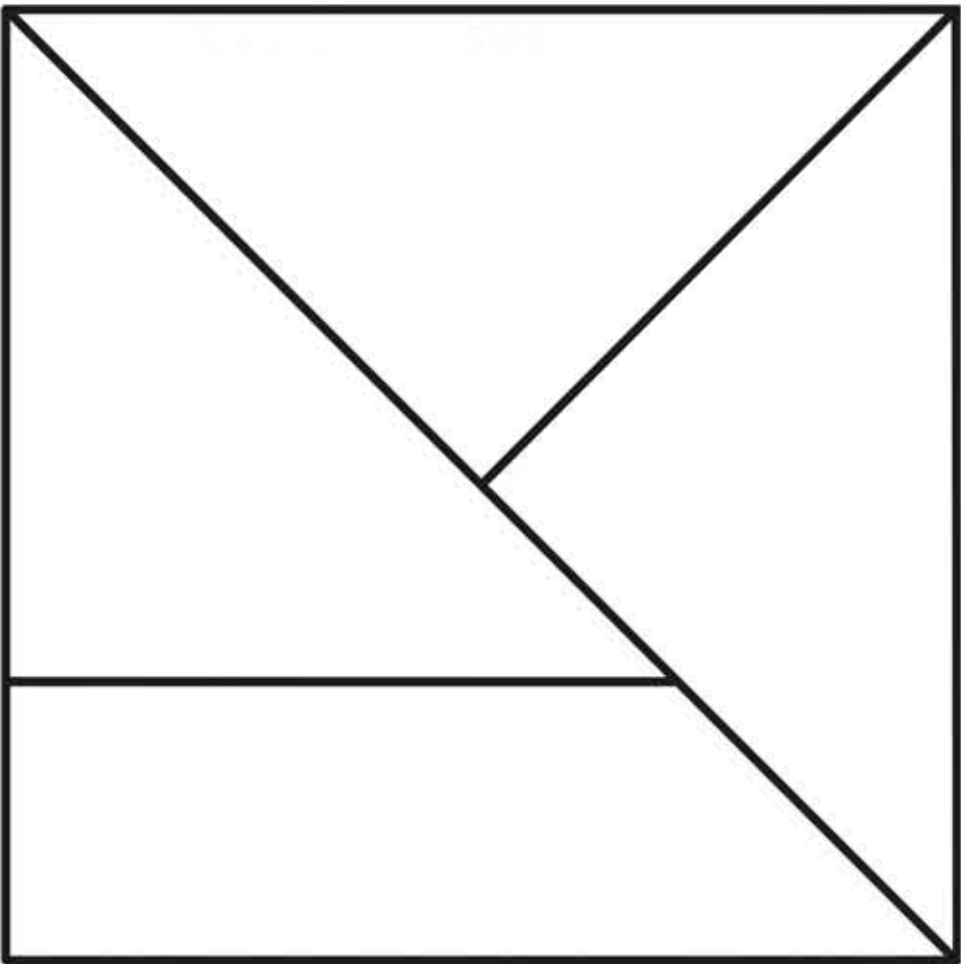
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Starry Night

Design by Chantal Paré

Armstrong Glass Company  
AR81 Orange Opal Streaky for Flame, 1/4 Sq. Ft.  
Bullseye Glass  
BE6264 Robin Egg Bue/Deep Royal Blue Ring Mottle  
for Sky, 1-1/2 Sq. Ft.  
BE126-0050 Light Green for Landscape, 3/4 Sq. Ft.  
BE0145-0050 Jade Green Opal Double Roll  
for Landscape, 1 Sq. Ft.  
BE6247 Medium Leaf Green/Emerald Green Mottle  
for Landscape, 1/3 Sq. Ft.  
Kokomo Opalescent Glass  
KO126LLRIP Medium Blue Opalume Brown  
for Landscape, 1/4 Sq. Ft.

Spectrum Glass  
OGT6076.83CC Inferno Pearl Opal for Flames, 1/4 Sq. Ft.  
OGT6067.83CC Mimosa Pearl Opal for Flames 1/3 Sq. Ft.  
OGT6051.83CCF Autumn Flame for Flames, 1/3 Sq. Ft.  
OGT134H Medium Blue Hammered Transparent  
for Sky, 1-1/3 Sq Ft.  
Uroboros  
UR2092 Light Brown Ring Mottle  
for Landscape, Scrap  
Wissmach Glass Co.  
WO311VG Violet Granite for Sky, 1-1/3 Sq. Ft.  
Additional Glass Scrap  
White for Steeple and Church  
Clear Textured for Stars  
Brown for Church and Building Tops  
Gray for Other Buildings  
Pink for Rings around Stars  
Brown for Housetop  
Dark Orange for Flame  
Clear Radium for Stars



Quilt Your Dishes

Design by Petra Kaiser

Wissmach Glass Co.  
3 mm Luminescent Clear, 6" x 6" (4)  
2 mm Clear Moss Texture 5" x 5" (1)  
2 mm Clear Hammered Texture 5" x 5" (1)  
2 mm Transparent Red, 5" x 5" (2)

# Whiskers

Design by Terra Parma, Text by Darlene Welch

Feline lovers everywhere will enjoy this scene that captures the fascinating aura of mystery and power that surrounds the cat. This 14" x 20" stained glass design by Terra Parma of a cat hoping to catch a glimpse of a stray bird or two is part of her *Images by Terra Pattern Pack Set 1010* collection from Stained Glass Images.

The deep shades of orange streaky, dark green, and dark purple selected for the flowers, leaves, and vase add sparkle and interest to the panel. However, those aspects of the scene, as well as the color of the cat's fur, the curtains, and the scenery showing through the window are perfect places to select different colors to match your own decor or favorite feline. Careful selection and placement of the glass colors and grain plus the three-dimensional cat's whiskers that are added with copper wire will add depth and realism to your project.

GPQ



## Wissmach Glass Co.

27-LL Orange/Opal/Crystal Streaky for Flowers, 1 Sq. Ft.

100-SP Dark Green/Opal for Leaves and Stems, 1 Sq. Ft.

275-L Dark Purple/Yellow Green/Medium Blue/Light Opal for Vase, 1/2 Sq. Ft.

155-LL Dark Purple/Green/Light Opal/Crystal Streaky for Window Frame, Scrap

145-SP Dark Amber/Opal/Crystal for Cat, 2 Sq. Ft.

55-L Amber/Green/Light Opal/Crystal for Cat Face, Ears, and Tip of Tail, Scrap

266-L Light Mauve/Light Opal for Nose, Scrap

WO-112 Dark Green/Dark Amber/Opal Wispy for Eyes, Scrap

325-D Light Amber/Dense Opal/Crystal for Curtains and Eyes, 4 Sq. Ft.

178-D Medium Amber/Sky Blue/Dense Opal/Crystal for Background, 3 Sq. Ft.

## Tools and Materials

7/32" Copper Foil Flux Solder  
Black Patina 1/4" U-Channel Zinc  
Copper Wire

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# DIY Pendant Lights Made Easy

*Design, Fabrication, and Installation by Jake and Jessie Battin, Text by Lisa Vogt*



It's a real thrill when my kids want to spend time with me in my glass studio cutting and fusing glass. My daughter and son-in-law recently moved into a new house. I was so excited when they told me they wanted to include functional glass art in their interior design plans. They decided to make artistic, custom pendant lights to hang over their kitchen island. Both Jessie and Jake have glassworking experience. I mean seriously, how could they not have dabbled with glass, especially when they have such a rich resource—my glass studio freely available to them all the time.

This was different, though. This time they weren't just in the studio to complete a project. They both really wanted to learn the entire process. They craved the working knowledge to apply complex construction techniques to build more elaborate pieces of art. As you can imagine, my heart sings when I think about them getting more involved and truly enjoying my passion.

## The Family Journey Begins

We embarked on a journey. Our mission was to build unique light shades and remain a happy family. I tried to guide and leave. It was so hard to leave, but I know that alone time in my studio is magical. When you're immersed in the act of creating, when your hands are busy and your mind is set free, your spirit is invigorated. I knew if they experienced that free-flowing positive energy, they'd be hooked just like the rest of us creatives.

In my vast experience, I know that draping glass can be difficult. Results often vary. Several factors play a role in the outcome including the size and shape of the fused glass. I suggested we make a test piece to ensure we could create a finished shape that resembled their vision.

### Oceanside Fusible Glass

200 White for Base Layer, 5 Sq. Ft.  
132 Light Blue for Design Layer, 5 Sq. Ft.  
*1/4 Sq. Ft. of Each of the Following*

Dichroic on Clear    Dichroic on Black

Transparent Iridized Purple    Clear

Transparent Light Blue    Transparent Medium Blue

Transparent Aqua    Transparent Light Green

Transparent Deep Aqua for the Pendant Light Rim

### Tools and Materials

13" Minimum Depth Kiln with Heating Coils in Lid only  
or in Lid and Sides

6-1/2" Large Floral Stainless Steel Slumping Mold

Tape Measure    1 Sq. Ft. ThinFire Fiber Paper

1/4" and 3/8" Diamond Glass Drill Bits

Variable Speed Drill and Water Source

Foam Peanut Filled Cardboard Box

Two Pendant Light Fixtures: TODOLUZ Modern Kitchen

Island Hanging Pendant Light Brushed Nickel and Single Mini

Ceiling Chandelier with Seeded Glass

Two 600-Watt Keyless Incandescent Porcelain Lamp Holder



*Our test piece*

### Important Discoveries

The test piece was priceless, since we learned that Jake and Jesse didn't like the addition of the yellow glass. Layered on the blue glass, the yellow changed to a muggy green that didn't go with their decorating color scheme. We also learned that the accent strips were too blunt for our taste, so we used longer strips on the actual pendant lights. Adjusting the tack firing schedule to go hotter to make the accent pieces around the rim melt more gave them a softer look. Changing the drape firing schedule to a lower temperature kept the interior of the pendant lights more open, so it would be easier to access and change the light bulbs.

Now that you have the motivating backstory, here's how we made the pendant lights. Keep in mind that my intention here is to guide and leave. Take the following, use it for inspiration, then blaze your own trail of blissful discovery.



### Figuring the Size

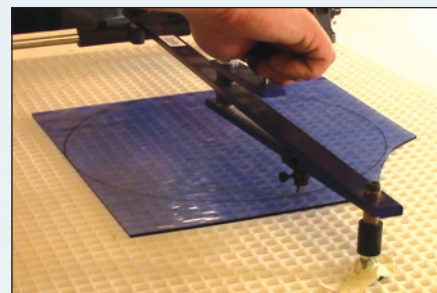
The first step in making our pendant lights was to measure the stainless steel draping mold. We wanted the lights as large as possible, but we didn't want the irregular edge to come in contact with the bottom of my kiln. This was a design choice made by Jessie and Jake.

We measured the mold up one side, across the flat top and down the other side with a flexible tape measure and concluded that a 15" round piece of art would give us the look they wanted. Of course, you can go larger. The result would be an irregular rim that flares out.

### Building the Lamps

1

*Cut the  
glass circles.*



Get started by cutting two 13" circles out of white glass for the base layer of the pendant lights. We selected white glass since white diffuses the light, so the shades would produce a soft but bright glow. It also hides the light bulbs from the side view of the pendant lights.

Next cut two 13" circles out of light blue glass for the top layer of the pendant light. Now cut the accent glass colors into 1/4" by 1" to 1-1/2" pieces for the rim of the pendant light. Vary the glass sizes for an attractive organic lamp shade rim.

2

*Grind the  
cut circles to  
improve the  
shapes.*



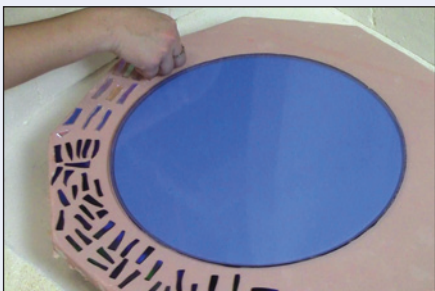
3

*Cut the strips for the pendant light rim.*



4

*Stack the glass on the kiln shelf and fire to a full fuse.*



Place the white glass circle on a primed or fiber paper covered kiln shelf. Stack the blue glass circle on the white glass and arrange the cut strips on the empty shelf around the circles. Fire the glass to a full fuse temperature using the suggested full fuse guide provided at the end of the tutorial.



5

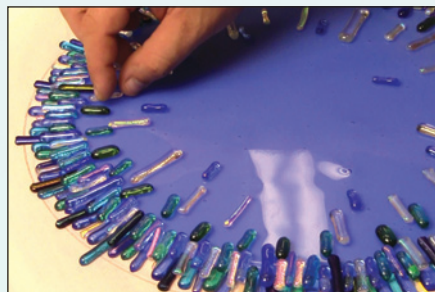
*Full-fuse extra strips for the pendant light rim.*



Make more accent pieces than you think you'll need. I know, they're tedious to make, but Jessie and Jake made more anyway. You'll be happy you did when it's time to assemble the project for the tack fuse step. Jessie and Jake were happy they stuck it out.

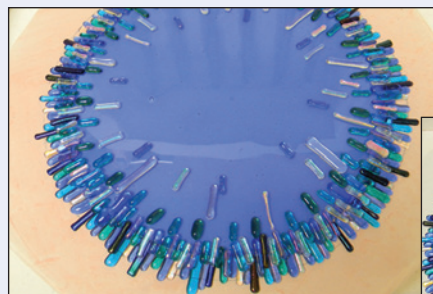
6

*Arrange the strips around and on the fused glass circles.*



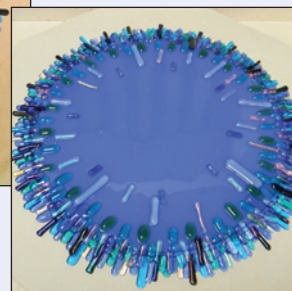
Use a pencil to draw a 15" circle on a primed or fiber paper covered kiln shelf. Center one fused circle inside the pencil line and arrange the fused strips around the circle, varying the lengths to give the rim a flowy, graceful look. Create a second layer by stacking strips on top of the first layer, again varying the placement to personalize the design.

When placing the second layer, overlap the first layer of strips and the fused glass circle. This visually softens the hard edge. Place the strips in a circular fashion at even intervals all around the fused glass circles.



7

*Tack-fire the assembled glass using the suggested guide provided at the end of the tutorial.*



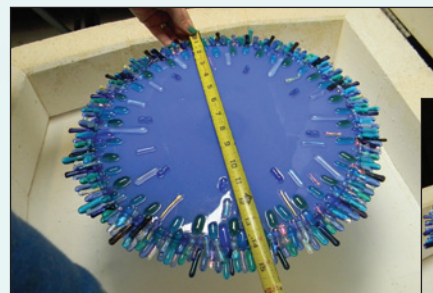
We intentionally tack-fired these projects to a slightly higher temperature than usual to give the accent strips a softer appearance. They were fired to 1385°F for 10 minutes instead of the standard 1365°F for 10 minutes. This is your opportunity to be the artist and decide for yourself how you'd like your lights to look. Don't hesitate to fire your pieces to the standard temp or experiment with a new temperature for more customized results.

## Draping the Glass

Here's the tricky part. Draping glass over a stainless steel mold often gives you inconsistent results. The size and shape of the glass you're draping has a huge effect on the shape of the finished art. The alignment and location of the heating coils in the kiln also make a big difference in the way the glass falls. The size and shape of your kiln also plays a role in the project's success or failure. When designing these pendant lights, we imagined a fluid, free-form bottom edge, so we wanted the draped shape to be graceful and flowy as well.

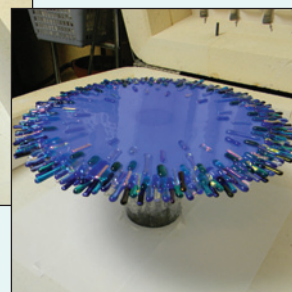
The clamshell kiln that we used to fire these pendant lights has an interior depth of 13". The heating coils are in the lid only and run from the front to the back. We removed the kiln shelf and kiln posts from my kiln, then covered the bottom of the kiln with fiber paper.

Removing the kiln shelf ensured that we had the greatest distance between the fused glass and the heating coils. If the glass is too close to the coils, it can break due to thermal shock during the heating process. When set up, there is approximately 5" between the glass and the heating coils in my kiln. The fiber paper protects the kiln floor if the glass falls off of the draping mold.



8

*Center the glass on the mold.*



Place the stainless steel mold in the middle of the kiln on the fiber paper, then center the glass on the mold.

9

*Fire the glass using the suggested draping guide provided at the end of the tutorial.*



If you haven't draped glass over a stainless steel mold yet, I recommend doing a test piece first. Then you can adjust your firing schedules to ensure that you achieve the desired results. The easiest and least expensive way to make a test piece is to fire two pieces of clear glass together, then drape the glass over the stainless steel mold. Take notes along with before and after pictures. Then you can repeat your successes and learn from any unexpected outcomes. Repeat these steps to make the second pendant light.

## Drilling the Holes

10

*Place the pendant light in a box of packing peanuts to prepare for drilling the holes for the light fixture hardware.*



The irregular edge made the bottom rim of the pendant lights fragile, so we carefully nestled the glass upside down in a box of packing peanuts. The soft material supported the glass without putting undue pressure on the free-form rim while drilling. We found the center of the circle with a ruler and marked it with a black pen. An extra set of hands is helpful for this next step. Have someone hold the glass to keep it steady while drilling.



*Drill the hole needed to attach the light fixture.*

11



Gather the tools needed to drill the holes in the lamp shades. Use a variable speed drill and start drilling with a 1/4" drill bit at about a 45-degree angle. Once the drill bit creates an impression, hold the drill vertically.

Lubricate the glass and bit with water while drilling to reduce friction and keep the glass dust down. Apply just enough pressure to make progress. Also rotate the drill bit as you're grinding the glass away. This extends the life of the drill bits while reducing the stress on the glass.

12

*Once you're through the glass, switch to the 3/8" drill bit and made the hole larger to accommodate the light fixture hardware.*



If you have not drilled a hole in glass before, I suggest you try it on a piece of scrap glass first. That way you get a feel for the amount of pressure to apply and see what it's like to actually go through the glass.

## Installing the Pendant Lights

Jessie and Jake ordered the light fixtures online and found several designs that complimented their furnishings. Prices ranged from under \$50 to over \$200. They wanted sleek and simple fixtures, so their light fixtures came in at the low range.

The light bulb sockets that came with the light fixtures were too big to fit comfortably inside the draped glass, so we bought simpler light bulb sockets at our local home improvement store. Depending on the style of the pendant light fixture you select, you might have to replace the light bulb sockets as well. **Note:** Due to the nature of the installation, I recommend having a licensed, professional electrician change the light sockets and hang your light fixtures and pendant lights.

I love going to the homes of friends and family members and seeing my artwork on display. It's an even greater thrill to visit Jessie and Jake's home and see them glow with pride when they talk about making their own pendant lights.

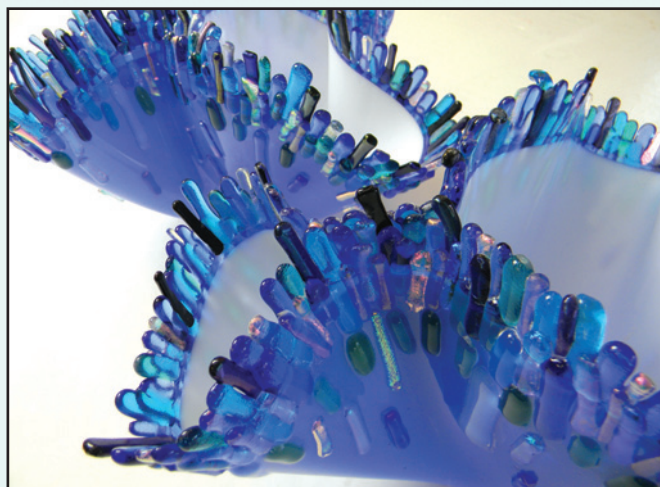
It's wonderful to have been included on their journey of discovery. I rejoiced along with them when they felt the satisfaction of overcoming obstacles and celebrated the enormity of their achievement when their new, decorator lights transformed their already beautiful kitchen into an intimately personal haven.

I hope you enjoyed taking this artistic journey with us. Now it's time to set out on your own and see what exciting glass art you can create. We are all capable of amazing things. We just have to try. I believe in you!

For more creative ideas and inspiration please visit our new website, A Crafty Crew, at [www.acraftycrew.com](http://www.acraftycrew.com).

Happy fusing!

**GPQ**



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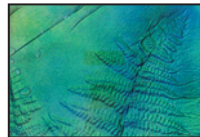


### Verre Églomisé™ ▶

with Peggy Pettigrew Stewart  
March 30

### Plant Pressing Ice Glass ▶

with Rick Silas  
April 1



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### Vitrigraph: Pouring, Pulling, Playing ▶

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### Float Glass with Enamels and Metals Lecture ▶

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April 22



### Pressed Vitrigraph Murrine Tray ▶ **New**

with Nathan Sandberg  
May 11 and 13



### Firing Schedules

Note that all kilns fire differently. Test-fire these guides in your own kiln and adjust as needed.

#### Full-Fuse Guide

Segment 1: Ramp 300°F/hr to 1300°F and hold 30 min.  
Segment 2: Ramp 500°F/hr to 1465°F and hold 10 min.  
Segment 3: Ramp 9999 (AFAP\*) to 960°F and hold 40 min.  
Segment 4: Cool to room temperature.

\*as fast as possible

#### Tack-Fuse Guide

Segment 1: Ramp 300°F/hr to 1385°F and hold 10 min.  
(Standard is 1365°F.)  
Segment 2: Ramp 9999 (AFAP\*) to 960°F and hold 40 min.  
Segment 3: Cool to room temperature.

\*as fast as possible

#### Draping Guide

Segment 1: Ramp 300°F/hr to 1175°F and hold 10 min.  
(Standard is 1265°F)  
Segment 2: Ramp 9999 (AFAP\*) to 960°F and hold 40 min.  
Segment 3: Cool to room temperature.

\*as fast as possible



*Lisa Vogt discovered glass while pursuing an education in fine art. For more than thirty-five years, this award-winning artist has drawn upon her fine arts background and own sense of style, drama, and whimsy to combine this historic medium with innovative glass techniques for limitless design possibilities. Her work has been on exhibit in major cities throughout the United States.*

*Lisa is the author of fourteen design books and a series of instructional videos in addition to frequent articles for industry magazines and fiction for publication. She also lectures at national and regional seminars and has been a featured artist on HGTV, PBS, and GPQ Glass Expert Webinars®.*

*A huge supporter of public art, Lisa regularly contributes artwork for auction to benefit local, regional, and national charities. Her home and studio are located north of Tampa Bay in Wesley Chapel, Florida, where she resides with her husband and two daughters. Visit [www.LisaJVogt.com](http://www.LisaJVogt.com) to find out more about her work and seminars.*

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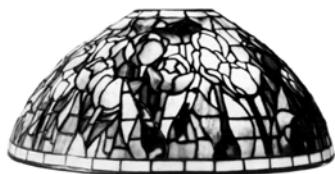
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Look for the  
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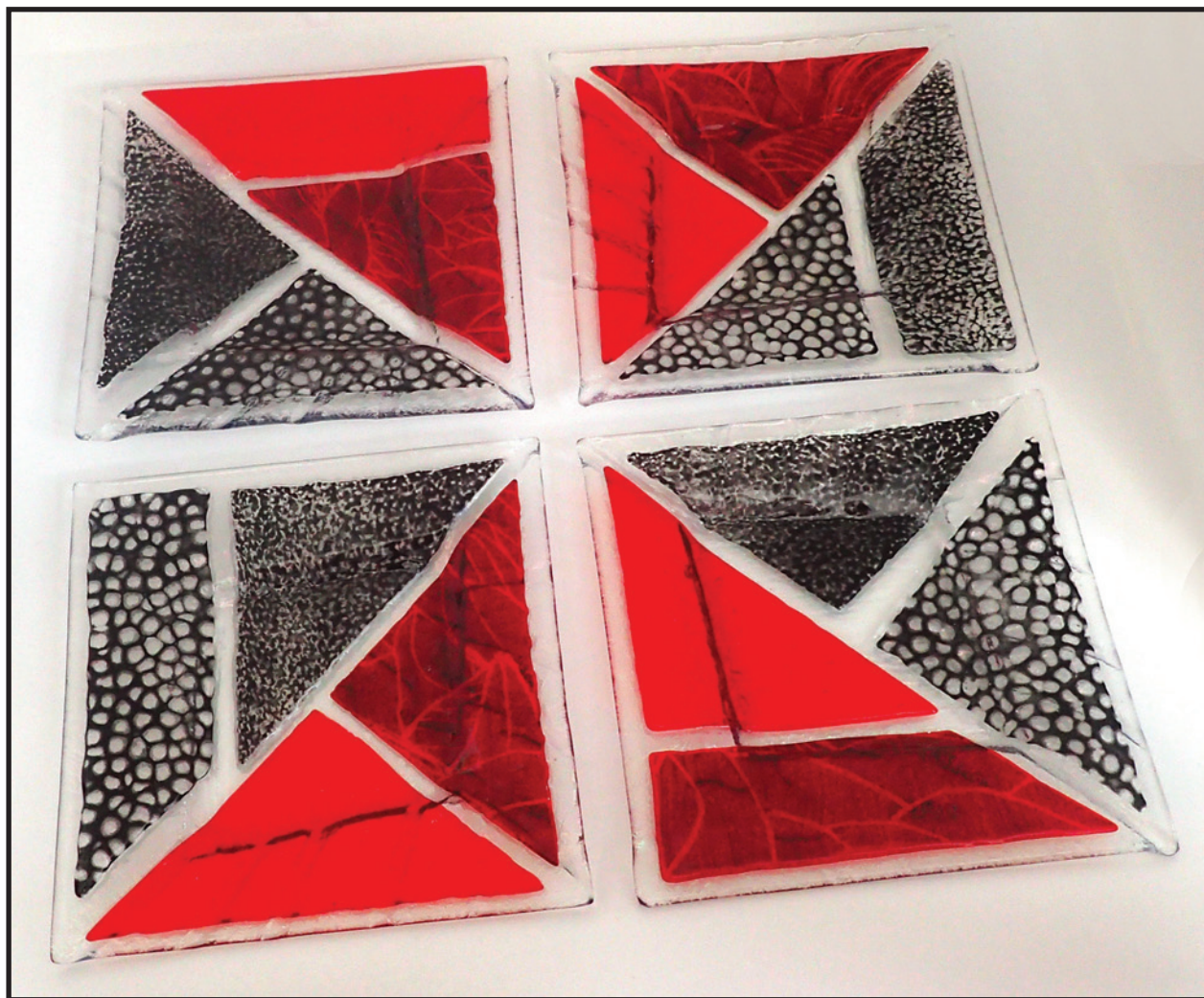
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# Quilt Your Dishes

*Design, Fabrication, and Text by Petra Kaiser*



Inspired by all of the work I see online and especially by my friend, Carrie Strobe, on her latest Facebook post, I thought I could use a simplified quilt design for a set of four dessert/cocktail dishes. Of course, when you follow my instructions, you can alternate sizes, patterns, and colors to your liking. You could also just use one of your own favorite quilt patterns. This 6" x 6" version makes good use of all the glass pieces, and hopefully, it won't be too busy to use with food. Here are the things we'll be learning in this tutorial.

- Preparing the Wissmach pattern glass with enamel paint
- Adding a pattern to a painted glass piece
- Making a two-in-one KLB mold for Wissmach Luminescent Glass
- Fusing and shaping in one firing

## **Wissmach Glass Co.**

- 3 mm Luminescent Clear, 6" x 6" (4)
- 2 mm Clear Moss Texture 5" x 5" (1)
- 2 mm Clear Hammered Texture 5" x 5" (1)
- 2 mm Transparent Red, 5" x 5" (2)

## **Tools and Materials**

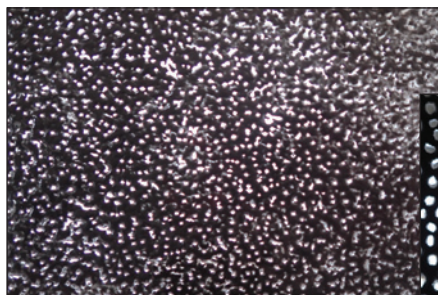
- 8" x 8" Kaiser Lee Board (KLB)
- Black Enamel Multi Pen    Needle
- Silicon Tipped Brush    Light Box
- Small Foam Brush    Fine Sandpaper
- Papyros® Kiln Shelf Paper
- Ceramic Tiles or KLB Pieces
- Respirator Mask    Putty Knife
- Kiln Wash Powder

## Getting Started

Let's start with the pattern. I saw one online that inspired me, but any pattern with four pieces would work. Since I don't want to get into trouble, I decided to draw my own. However, no matter how I divide a square into 4 pieces, all those designs can't be my original. Someone has already cut it in the same way, which means that original designs are very rare. One time I thought I had a wonderfully original idea, only to find out later that I had that same idea when I wrote my *Fuse It* book years earlier. I do like to give credit to the people who inspire me, though.

The 3 mm luminescent clear glass is the base, while the pattern sheets will be thin 2 mm clear textured and transparent red glass. Three of the four-part sheets will have a different pattern, while one of the red sheets will be solid.

## Preparing the Part Sheets with Enamel Paint

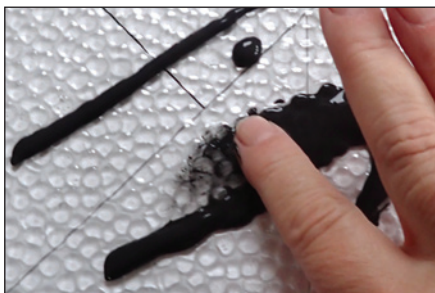


Select your preferred enamel colors.

I love black and red, so I chose a black enamel. In this case, I used one called a Multi Pen, a premixed glass enamel that fires very shiny and does not need to be capped. A small amount can cover a lot of square inches.

2

To maintain the texture in the patterned clear glass, apply some enamel to the textured side with your finger.



This technique is called rouging. It helps you to get more paint into the grooves than on the surface, but be careful not to go along the edge of the glass. And don't worry. Your finger will not be stained after you wash off the enamel paint. Have a look at the Wissmach YouTube channel to find out more about this technique and others at [www.youtube.com/c/WissmachGlass](http://www.youtube.com/c/WissmachGlass).

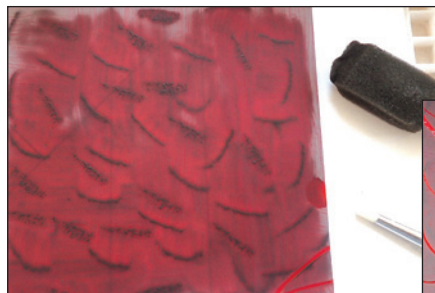
Let the enamel dry, then use sandpaper to remove any excess paint from the top parts of the textured glass. Be sure to wear your respirator mask while you are sanding the glass enamel powder. You can hold the glass against a light source to see your progress.

3

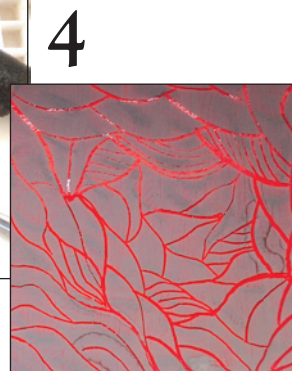
If you are removing a lot of enamel powder, you can collect it on a clean piece of paper and keep it in a little container.



With a little bit of water, you can liquefy it and use it again.



Use the black enamel to add a pattern to one of the transparent red squares.



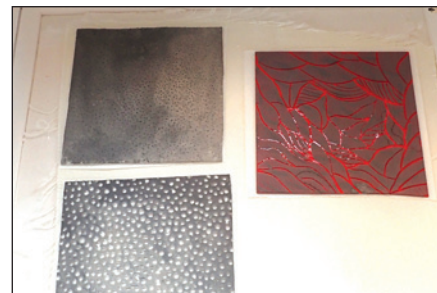
4

I wanted four different types of glass for my quilt. To stay within my black and red theme, I used one of the red pieces and added a pattern with a different technique.

A foam brush was used to coat the red glass with a thin black enamel layer. Then I used a silicon tipped brush to remove the still-damp paint to create the lines you are seeing in the image. After each stroke, I removed the excess enamel from the tip of the silicon brush with a towel. This technique results in a very subtle background pattern.

5

Fire the glass squares to set the enamel paint.



Before I cut the sheets apart, I like to fire the squares to make sure the paint does not smear or come off. Here is the schedule I used, but all kilns fire differently. You may need to make adjustments in the schedule for your own kiln.

### Schedule for Prefiring Painted Elements

Segment 1: Ramp 900°F/hr to 1000°F and hold 10 min.

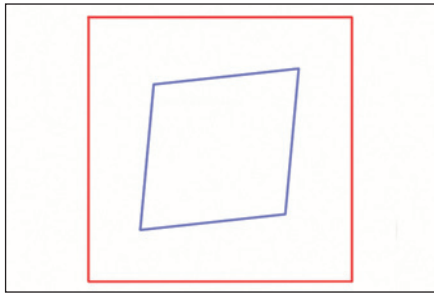
Segment 2: Ramp 9999 (AFAP\*) to 1370°F and hold 10 min.

Segment 3: Ramp 9999 (AFAP\*) to 900°F and hold 20 min.

\*as fast as possible

6

*Prepare the KLB mold.*

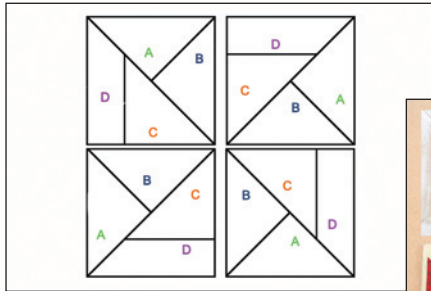


When you are using the 8" x 9" board, place the pattern on the Kaiser Lee Board and cut off a strip to make it into a square of approximately 8" x 8". Place the pattern on top and use a needle to poke through the paper along the pattern line around the diamond shape. This is the easiest way to transfer the pattern without any measuring.

Use a putty knife or any sturdy thin tool to cut out the centerpiece. I go down a little bit at a time and remove the residue in between. If you press too hard, it could break out on the other side. That's not a problem, though, since we will shape it in the next step anyway.

Now we will slant one side of the mold to the outside, then turn it over and slant the other side to the inside. Check the end of the article for more tips on using KLB to make molds. If you would like to see bigger images of the molds and the setup, visit the slide show at [www.kaiserlee.com/quilt-dish](http://www.kaiserlee.com/quilt-dish).

### Finishing the Quilt



*Place each prefired part sheet on the 5" x 5" pattern, cut them to size, and assemble on the 6" x 6" clear glass base.*

My pattern squares are only 5" x 5", because I like to have some clear glass showing through between the colored pieces on the finished 6" square plates. I place each of the prefired part sheet on the 5" x 5" pattern and cut them to size.

Once you have cut all four top pieces into 4 pattern pieces, clean all of the glass and assemble the 4 quilt plates according to the layout pattern. Before you place your colored pieces on the clear glass base, make sure you place them luminescent coating down, which is the very smooth side of the clear glass.

7



8

*Set up the mold for firing the plates.*



In order to make a shallow dish, place the diamond centerpiece on a fiber kiln shelf or a regular kiln shelf lined with fiber paper. Next place some small ceramic tiles in 2 layers around all 4 sides of the diamond. Now place the mold on top with the slanted edges facing the center.

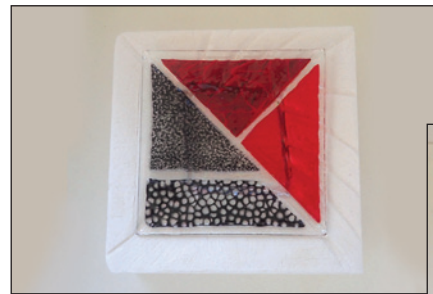
If you want a deeper dish, add another tile layer. If you want a very shallow dish, take one tile layer away. Before one of our students showed us his use of those little ceramic tiles, we made our own mini posts from KLB. If you don't have those tiles, you can make some mini posts with the strip of KLB that you cut off the side of the 8" x 9" piece of KLB.

9

*Prepare the mold with mold release.*



With KLB, it is best to use kiln wash in a dry form. Glass does not stick to KLB, but it can get rough. A thin layer of kiln wash powder will prevent that. I use a nylon knee-high stocking as my kiln wash powder applicator. This is a sufficient method, especially when you are using luminescent coated glass. Should you use an opaque glass as your base layer, I recommend shelf paper as a release.



10

*Use the suggested firing schedule to full-fuse and shape the quilt squares.*



But wait! Don't we have to fire the flat pieces first? No, not with KLB molds. You can finish these dishes in one firing. The following schedule is the one that I used. As mentioned before, remember that all kilns fire differently, so you may need to make adjustments to fit your own kiln.

## Full Fuse and Shaping Schedule

Segment 1: Ramp 600°F/hr to 1000°F and hold 10 min.

Segment 2: Ramp 9999 (AFAP\*) to 1410°F and hold 10 min.

Segment 3: Ramp 9999 (AFAP\*) to 900°F and hold 40 min.

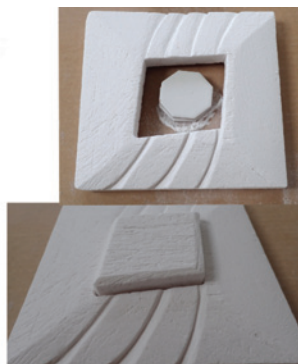
\*as fast as possible

Now you're ready to enjoy welcoming your guests using your striking new quilted dishes. **GPQ**

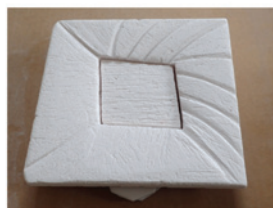
## Kaiser-Lee Board Molds

### Two in One

**1** Reverse fusing slanted sides going to the outside.



**2** Right side up fusing, slanted sides going to the inside.



### Tips for Making Kaiser Lee Board Molds

Let's look at how you can make a KLB mold that will work for many different projects. First, start by designing the mold. You can use a 6" x 6" board, but with an 8" x 9" x 1" piece of KLB, you will have more options for different sizes of dishes.

What makes this KLB mold extra special is that we will prepare it so you can use the mold for reverse fusing as well as for right side up fusing. Other uses include a deep drop vase and a paperweight casting. I like the diamond shape for my dish.

When designing the mold, you also need to consider having a wide enough rim. In this case, we fired the 6" squares on it, so I made sure that the cutout was not too close to the 6" square guideline. We are no closer than 3/4" to the edge of the glass.

Visit the slide show at [www.kaiserlee.com/quilt-dish](http://www.kaiserlee.com/quilt-dish) for larger images of the molds and setup.

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*Petra Kaiser, internationally renowned kiln formed glass artist and instructor, has a distinctive style that captures Florida sun, light, and water in sculptures, functional glassware, and wearable designs. She is always drawn to 3-D sculptures and abstract shapes, and when first introduced to glass fusing in 1997, she found the available mold options rather limiting. This gave birth to Kaiser Lee Board, a perfect kiln forming medium developed by Petra and husband Wolfgang, that is easy to cut and form into any shape for fusing molds.*



*Petra loves to teach and shares her cutting-edge techniques and designs with students in her Fuse It Studio and all over the world and is a regular instructor at the Glass Craft & Bead Expo, BIG Arts, and Edison State College. She is also a kiln glass consultant for Wissmach Glass and has shared her innovative ideas in three books from Wardell Publications as well as through numerous articles in various international glass magazines. Visit [www.kaiserlee.com](http://www.kaiserlee.com) to learn more about Petra's glass art and workshops.*

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# Day Lilies

*Design by Paned Expressions Studios, Text by Darlene Welch*



Day lilies are a favorite of many gardeners because of their beautiful blooms, the fact that they are easy to grow, and their hardy nature. The Wisspy glass used for the flowers in this 22" x 22" design from Paned Expressions Studios gives them a lifelike appearance and captures them in all their glory against the light amber background and yellow-green border.

*Day Lily* is just one of over 2,000 full-size patterns in 23 fantastic collections available from Paned Expressions Studios. The patterns are provided on CD in color as well as black and white in JPG, TIFF, and Glass Eye formats for both PC and Mac, which makes them easy to resize, reshape, and recolor. The designs also cover all levels of glass skills, so there is something for everyone. Visit [www.panedexpressions.com](http://www.panedexpressions.com) for this and many other stunning patterns from Paned Expressions Studios.

**GPQ**

## **Wissmach Glass Co.**

WO-17 White Opal/Red/Orange Wisspy for Flowers, 1 Sq. Ft.  
 57-L Medium Green/Light Opal/Crystal for Flower Buds, Scrap  
 23-L Light Green Light Opal/Copper Red for Leaves, 1 Sq. Ft.  
 101-L Dark Green/Light Opal/Crystal for Stem, Scrap  
 325-D Light Amber/Dense Opal/Crystal for Background, 4 Sq. Ft.  
 178-D Medium Amber/Sky Blue/Dense Opal/Crystal  
 for Border, 4 Sq. Ft.

## **Tools and Materials**

7/32" Copper Foil Flux Solder  
 Black Patina 1/2" U-Channel Zinc

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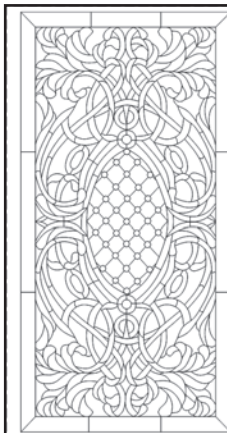
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# Proclaiming a Passion

## Capture Your Favorite Things in Glass

*Design, Fabrication, and Text by Robin Anderson*



Is there something that you are passionate about? Something that you absolutely love? Besides glass, I mean, of course. Is it Coffee? Hiking? Dairy cows? Surfing? Dogs? Your dog? Old cars? Let's tell everybody about it.

For now, let's say it's frogs. They're just so cute. Let's use your glass skills to show off your passion!

### 96 COE Glass Powder and Fine Frit

Dark Green Opal and Transparent

Olive Green Opal and Transparent

Marigold Opal Orange Opal Dark Red Opal

Chestnut Opal Flame Opal Turquoise Green Opal

Red Opal Yellow Transparent Clear Fine

### Spectrum OpalArt™ Sheet Glass

OA/325-52SF Sour Apple, Scrap

### Tools and Materials

Background of Choice Glass Cutter

Breaking and Grozing Pliers

Sharp Pointed Scissors Kiln Wash

Ruler or Carpenter Square

Powder Vibe with Extra Tips

Beading Tweezers Small Spoon

Small Art Paint Brushes

Elmer's® Clear Glue Sharpie® Pen

Colour de Verre 2-1/2" and 3" Leaf Mold

Colour de Verre Toad Mold

Creative Paradise Tree Frog Mold

Hanging Hardware

### Optional Tools

Cricut™ Machine Ear Wax Vacuum

1

*Choose a background for your project.*

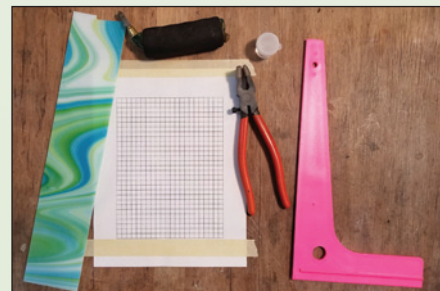


You can use just about anything, as this is going to be a mixed media project. A piece of weathered barn wood makes an ideal background, since it's reasonably flat, has a lot of interesting texture and coloring, and fits nicely with anything outdoors. You could use any kind of wood, though—a chair back, for example, or a piece of driftwood, or absolutely anything else that suits your fancy and is large enough to hold the letters "I Love (fill in your own passion)."

No ideas? Go stroll through an antique store or even a junk shop and get inspired! When you find your piece, clean it well and get started on your dots.

2

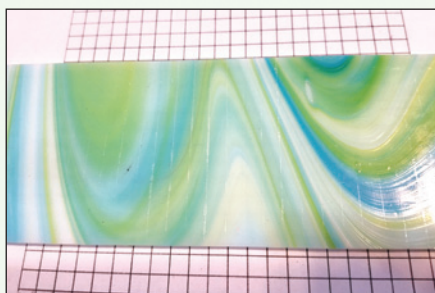
*Start by choosing the glass for the dots and gathering the tools you'll need for scoring the glass.*



There's no getting around it. Making dots is just plain tedious, but it's a great job for keeping your hands busy while watching TV. You will want a good contrasting color from the background and, if possible, something that fits with your topic. I chose a medium yellow-green to look sort of "swampy" to go with my frogs and to show up well on the dark wood. Glass that has several colors swirled through it makes wonderful dots with those different colors.

3

*Score the glass horizontally and vertically using the 3/8" grid to measure the score lines.*



A 3/8" square makes the ideal dot. There is a 3/8" grid in the pattern section for you to copy and use. Square up your glass on the grid and score 3/8" strips going vertically and then horizontally using the grid lines, with a ruler or square as a guide.

4

*Separate the glass strips.*



When the glass is all scored, break it into 2-strip-wide strips going in one direction, then break those strips into single-wide strips.



5

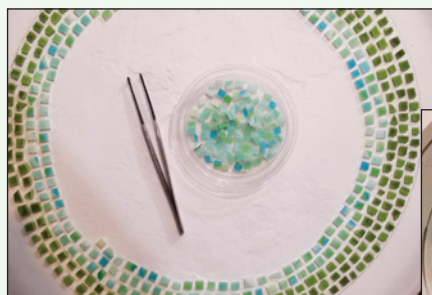
*Finally, break off the 3/8" squares from each strip.*



Bravo! You now have bunches and bunches of squares ready to become dots! Now, a couple of notes.

Very likely, not all of your squares will be perfect. Don't throw them out! Fire them too. You may well need a smaller dot or a bigger one or a longer one. All dots are valuable.

Also make many, many more dots than you ever think you may need. "I Love (insert your own passion)" isn't many letters, but make enough dots to write the first page of the dictionary. That way you'll have plenty of choices so you can pick out just the right ones for your lettering—and a head start on your next project.



6

*Fill a kiln shelf as full as possible with all those little squares.*

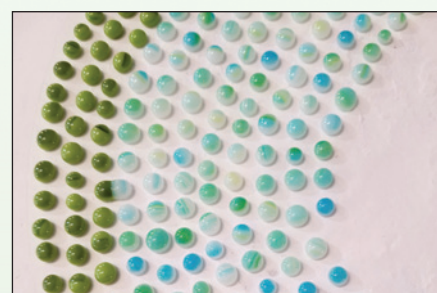


They will not expand or move much at all, so as you can see in the photo, they can be put fairly close together, about 1/2" or so between them. You can get a *lot* of dots on a shelf!

The most useful tool for placing the dots is a pair of beading tweezers. They have concave tips that are perfect for grabbing the squares and are even better later for holding the dots. If you are using a multicolored glass, you want to pay attention to how you lay them out in the kiln, with the most interesting side up.

7

*Fire the dots using the schedule at the end of the article, adjusting if necessary for your kiln.*



When the dots are cool, wash and dry them and they are ready to use.

8

*Create the stencil for the lettering.*

*I Love Frogs*

Choose the font style for the letters that will go on the background and create a stencil, if desired. You can add the letters freehand if you wish, but I chose to stencil the lettering to get the right flourishes and spacing. The font I used is Lucida Handwriting Bold Italic, but obviously you will use whatever font you want in whatever size fits your background.

9

*Once you have chosen the font and printed out the words, cut out the letters on the stencil and tape it to the background.*



If you have a Cricut or similar machine, that's really easy to do, but you can also just use a pair of scissors with sharp points. Once it is cut out, tape it in place on the background and use a Sharpie to draw a single line in the middle of each letter as a guide line before removing the stencil.

*Spread out the dots on a contrasting colored piece of cloth so you can easily sort through them.*

10



*Glue the lettering dots onto the background.*

11



Take your glue—Elmer's Clear Gel, E6000, or whatever you choose—and draw a line of glue along the Sharpie line. Then lay dots along that line, being sure that they get a firm connection with the background. Do one letter at a time. When they are all done, let the whole piece dry while you work on the frogs and leaves.



*Load the frog and leaf molds with your desired colors of powder and frit glass.*

12



Frit casting is one of the most fun and creative projects I know. The molds used here are Colour de Verre's 2-1/2" and 3" leaf mold and their toad mold plus Creative Paradise's tree frog mold. There are novelty molds for just about everything. If your particular passion isn't available, there are lots of YouTube videos and tutorials on making your own molds. The Winter 2020 issue of *Glass Patterns Quarterly* has an excellent article by Dane Brady on making a latex mold, for example. Be sure the molds have a fresh coat of kiln wash before using them.



The third frog showing in my finished piece is a Freeze and Fuse piece left over from another project. There are lots of Freeze and Fuse tutorials on YouTube and Facebook if you would like to learn that method as well.

Once you have your molds ready, you need glass powders and fine frits in your choice of colors plus a selection of small art brushes, small spoons, and tweezers. Other tools that can be used to move the powders and frits around are a Powder Vibe and maybe a little ear wax vacuum. Sounds strange, but it's a dandy tool for removing powder from unwanted places.

Remember that you are working **bottoms up**, laying down the frit in the mold that will be the top of your frogs first. You work in layers, not components. For example, you may put powder down on froggie's feet several times as you build the layers, not just one time for "a foot."

Using powder in the Powder Vibe enables you to add a lot of detail—for example, the eyes, spots on the back, stripes, and toes. The leaves can have brown stems or gradations of color. Use the powders for details like that, but make the bulk of the "fill" done in fine frit to avoid a milky look. To make the colors less dense, make up to 1/2 of the volume clear frit mixed with the color or mix a transparent color with an opal of the same color.

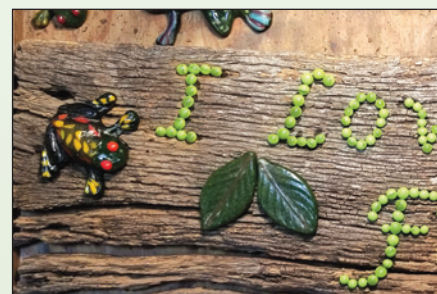
13



*Finish filling the molds and fire according to the schedule at the end of the article.*

To make the frogs and leaves a full thickness, fill the molds pretty much to the top and mounded just a bit, then use the Full Thickness Firing schedule, making any necessary adjustments for your own kiln. However, if you want to make a thin casting, only fill your mold about half to two-thirds full and use the Thin Casting schedule.

14



*Attach the frogs and leaves to the background.*

When the molds are fired and your pieces are cleaned, try placing them on your background until you are satisfied with the arrangement. If the background has an uneven surface, try to smooth it as much as possible where you will be gluing the pieces. Now glue them in place, and you are nearly finished.

*Add the hanging hooks.*



Your choice of hanging hardware obviously depends on the type of background you chose. I used cup hooks for mine. If the background is wood, just make sure that the hardware is securely screwed into the wood. It's also a good idea to squirt some glue into the hole before inserting the screw for good measure. Since my barn wood was a bit weathered, I wanted to be sure the weight did not pull the hangers out.

We're all done. Now enjoy displaying your proclamation for a passion!

**GPQ**



Robin Anderson got hooked on stained glass back in the early 1990s and opened her Sunny Brook Studio in 2000. Since then, she has become best known for her highly realistic pet designs, most of them done as memorial pieces for beloved companions who have passed. In 2013, Robin also turned her attention to making her designs available to other artists through her pattern books, *Best in Show*, *Best in Show – Puppy Class*, and *It's a Cat's Life*, all available from your local stained glass retailer, Amazon, or her web page, [www.sunnybrookstudio.com](http://www.sunnybrookstudio.com).



Turning to fusing in 2002, Robin now enjoys trying all sorts of new ideas in fused glass, exploring its limits, and looking for new ways to achieve fabulous results. She loves to hear from other glass enthusiasts and can be reached at [robin@sunnybrookstudio.com](mailto:robin@sunnybrookstudio.com) as well as on Facebook at Sunnybrookstudio.

### Firing Schedules for 96 COE

Remember that all kilns fire differently. Adjust these schedules as needed to work with your own kiln.

#### Dot Firing Schedule

Segment 1: Ramp 350°F/hr to 1440°F and hold 17 min.  
Segment 2: Off.

Reduce the temperature for dark colors.

#### Full Thickness Frit Casting Mold Schedule

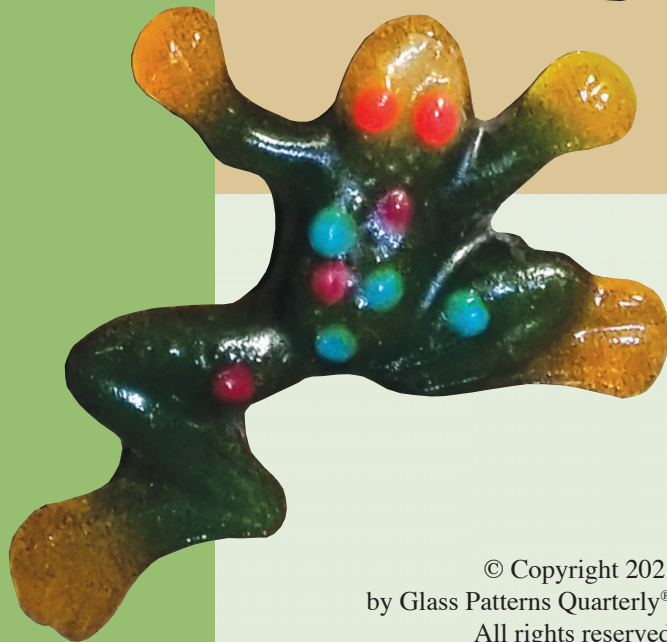
Segment 1: Ramp 300°F/hr to 1290°F and hold 9 min.  
Segment 2: Ramp 9999 (AFAP\*) to 960°F and hold 45 min.  
Segment 3: Off.

\*as fast as possible

#### Thin Frit Casting Mold Schedule

Segment 1: Ramp 300°F/hr to 1380°F and hold 12 min.  
Segment 2: Ramp 9999 (AFAP\*) to 960°F and hold 45 min.  
Segment 3: Off.

\*as fast as possible

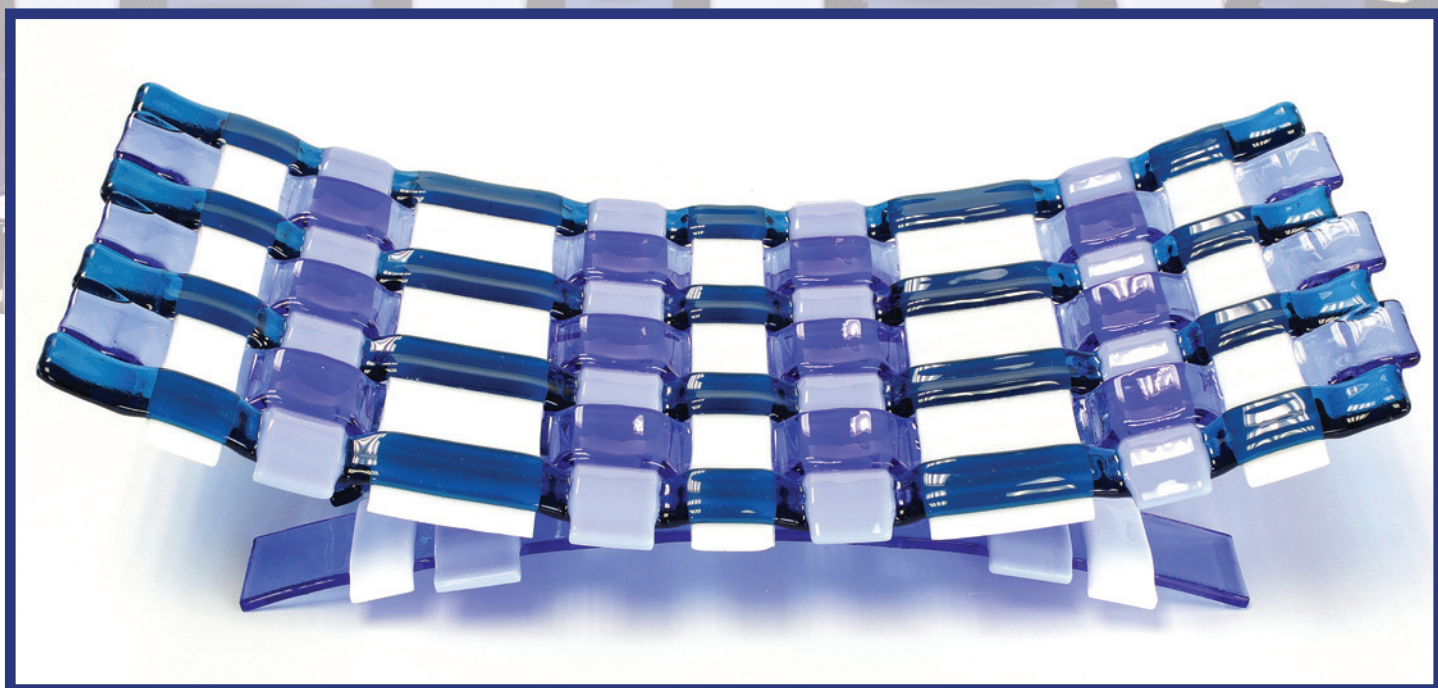


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# Woven Glass Tray with Stand

*Design, Fabrication, and Text by Dennis Brady*

Photography by Jason Brady



This project was done with 1-1/2"-wide and 3/4"-wide steel weave molds with 1" spaces, but it could have been done in any variety of mold sizes and space that you like. It could also have been done with ceramic molds or strips of 6 mm-thick float glass coated with boron nitride or covered with strips of kiln paper.

## ***Glass for Tray***

### **Wissmach Glass Co.**

96-19 Transparent Peacock, 3/4" x 12" (4)

96-14 Opal Blue, 3/4" x 6" (4)

### **Additional Glass**

Transparent Pale Blue, 1" x 12" (3)

Opal White, 1-1/2" x 6" (2) and 3/4" x 6" (3)

## ***Glass for Stand***

### **Wissmach Glass Co.**

96-14 Opal Blue, 3/4" x 5" (2)

96-19 Transparent Peacock, 3/4" x 2-1/2" (4)

### **Additional Glass**

Transparent Pale Blue, 1" x 9" (2)

Opal White, 1/2" x 5" (2)

3/4"-Diameter Clear Pebbles (4)

### **Tools and Materials**

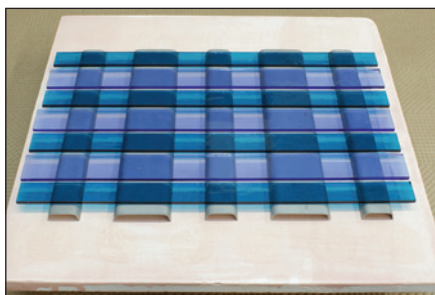
Stainless Steel Weave Molds, 1/2" x 8" (2) and 3/4" x 8" (3)

12" x 12" Stainless Steel Reversible Mold

Boron Nitride, Kiln Wash, or Kiln Paper

1

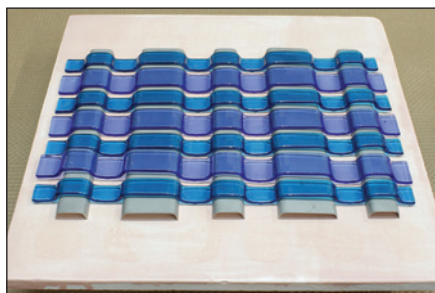
*Cut the glass strips, prepare the molds, and place the strips on the molds.*



Cut the required size and number of glass strips. Apply kiln wash to the molds and set them out in the desired pattern with a 1" space between each mold. As an alternative to kiln wash, you could use boron nitride or strips of kiln paper. Alternating the glass colors, set the glass strips on the molds, taking care to have at least a 3 mm space between each glass strip to ensure that they don't touch each other and tack fuse together.

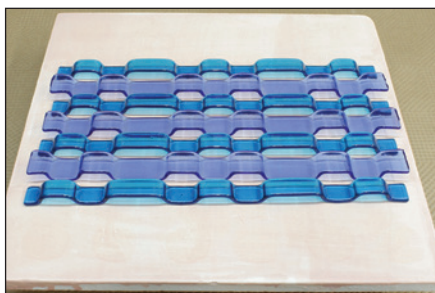
2

*Fire the glass strips to a tack fuse using the suggested Weave Strips firing schedule at the end of the tutorial.*



3

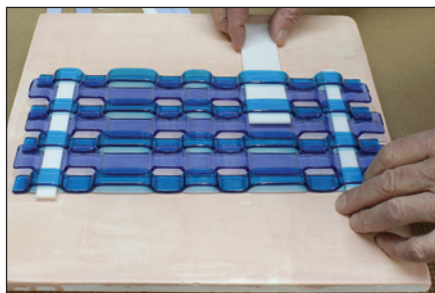
*Create an alternating pattern with the glass strips.*



Remove the glass strips from the molds and turn every second strip over to create the alternating pattern needed to produce a weave.

4

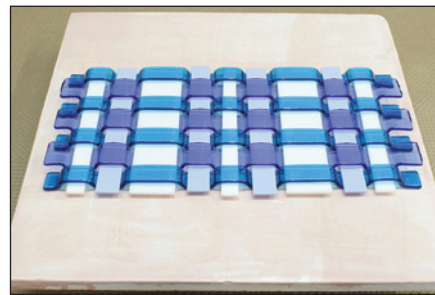
*Insert the cross weave pieces.*



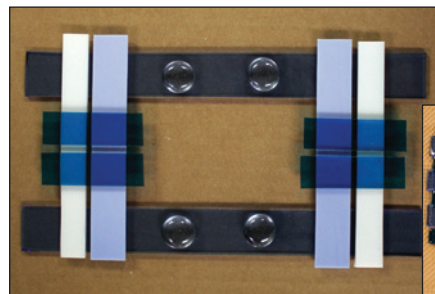
**It is very important that you not cut these cross pieces in advance.** You cannot be certain that the glass strips will have slumped enough to allow the predicted size of cross weave pieces to fit in. Wait until the project is ready for the cross pieces, then test to confirm what size of glass pieces fit.

5

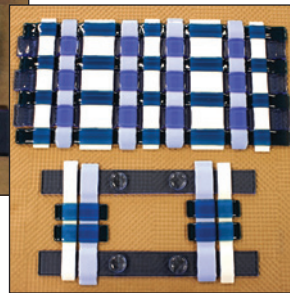
*When all the cross pieces have been inserted, fire the project using the Weave Assembly schedule at the end of the tutorial.*



6



*Make a stand for the tray, if desired.*

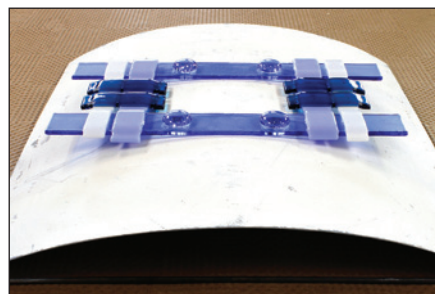


Making a stand for the tray is completely optional. You can eliminate it if you wish. It's only purpose is to display the woven tray.

Lay out the pieces for the stand. This shows one possible design for a stand, but you can have fun experimenting with different designs for stands for your projects. The 4 clear glass pebbles are not critical, but they work well to hold the tray elevated from the stand and act as feet to stabilize the woven tray, which is shown here with the matching stand after tack fusing.

7

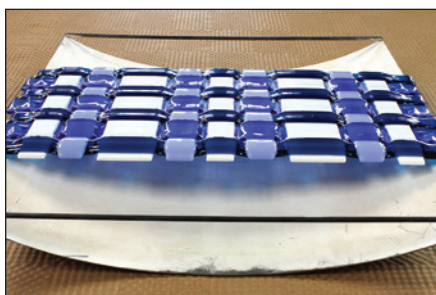
*Set the stand on the metal mold and fire to drape the stand.*



This mold was sprayed with boron nitride, but you can also use kiln wash or a piece of kiln paper. You can find a suggested Drape & Slump schedule for steps 8 and 9 at the end of the tutorial.

8

Set the tray  
in a metal mold  
and fire to slump.

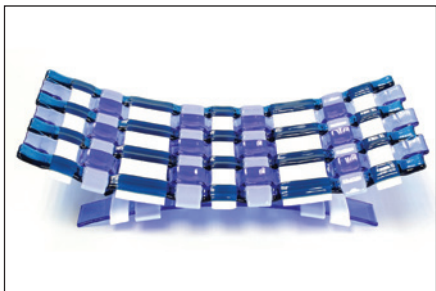


The drape and slump firing for this project was done in a steel reversible mold to ensure that the drape and slump were the same arc, but you could do this in any mold. This mold was sprayed with boron nitride, but you can also use kiln wash or a piece of kiln paper. The stand is shown here after drape firing.



9

Choose your  
favorite orientation  
for setting the tray  
on the stand.



The tray can be  
set parallel or perpen-  
dicular to the stand.  
By keeping the tray  
and stand separate you  
have the option of dis-  
playing them either  
way.

GPQ



## Firing Schedules

Below are the suggested firing schedules for the woven tray and stand. Remember that all kilns fire differently, so you may need to make adjustments to fit your own particular kiln.

### Weave Strips Firing Schedule

Segment 1: Ramp 400°F/hr to 1000°F and hold 20 min.  
Segment 2: Ramp 800°F/hr to 1350°F and hold 30 min.  
Segment 3: Ramp 9999 (AFAP\*) to 960°F and hold 60 min.  
Segment 4: Ramp 400°F/hr to 600°F and no hold.  
\*as fast as possible

### Weave Assembly Firing Schedule

Segment 1: Ramp 300°F/hr to 1000°F and hold 20 min.  
Segment 2: Ramp 800°F/hr to 1350°F and hold 15 min.  
Segment 3: Ramp 9999 (AFAP\*) to 960°F and hold 60 min.  
Segment 4: Ramp 300°F/hr to 600°F and no hold.  
\*as fast as possible

### Drape & Slump Firing Schedule

Segment 1: Ramp 300°F/hr to 1000°F and hold 20 min.  
Segment 2: Ramp 800°F/hr to 1250°F and hold 20 min.  
Segment 3: Ramp 9999 (AFAP\*) to 960°F and hold 60 min.  
Segment 4: Ramp 300°F/hr to 600°F and no hold.  
\*as soon as possible

*Dennis Brady has been a full-time professional glass artisan since 1980 and currently works with stained glass, fusing, casting, glassblowing, and sandblasting. He has authored and published six books of stained glass patterns plus A Lazy Man's Guide to Stained Glass. Along with his sons, Dane and Jason Brady, he operates several companies. DeBrady Glassworks produces glass art; Victorian Art Glass sells tools, equipment, and supplies; and Master Artisan Products manufactures molds and tools for glass artisans. He has also created the website Glass Campus, which offers over 100 tutorials and videos teaching numerous glass art techniques as well as tips on how to make a living as a glass artisan.*

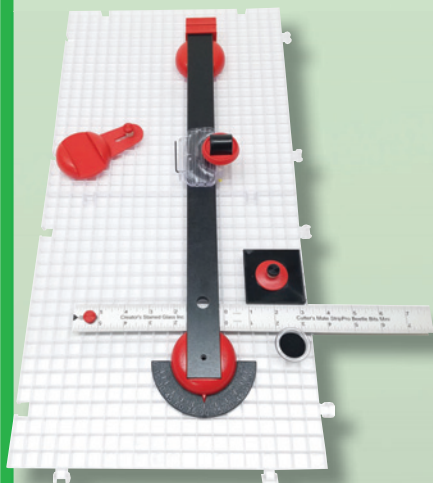


*Dennis teaches extensively in his home studio in Victoria, British Columbia, Canada, and as a guest instructor in several other countries. He is also a contributing artist to GPQ's live and recorded Glass Expert Webinars™ and Master Glass Artisan Lecture Series™. His "push the boundaries" approach to experimentation and innovation is always, "How fast can I go until I skid into the ditch?" Visit [www.debrady.com](http://www.debrady.com) to learn more about Dennis and his art.*

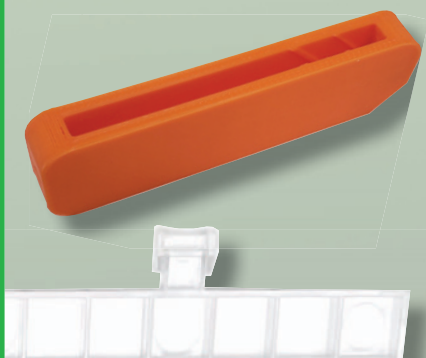
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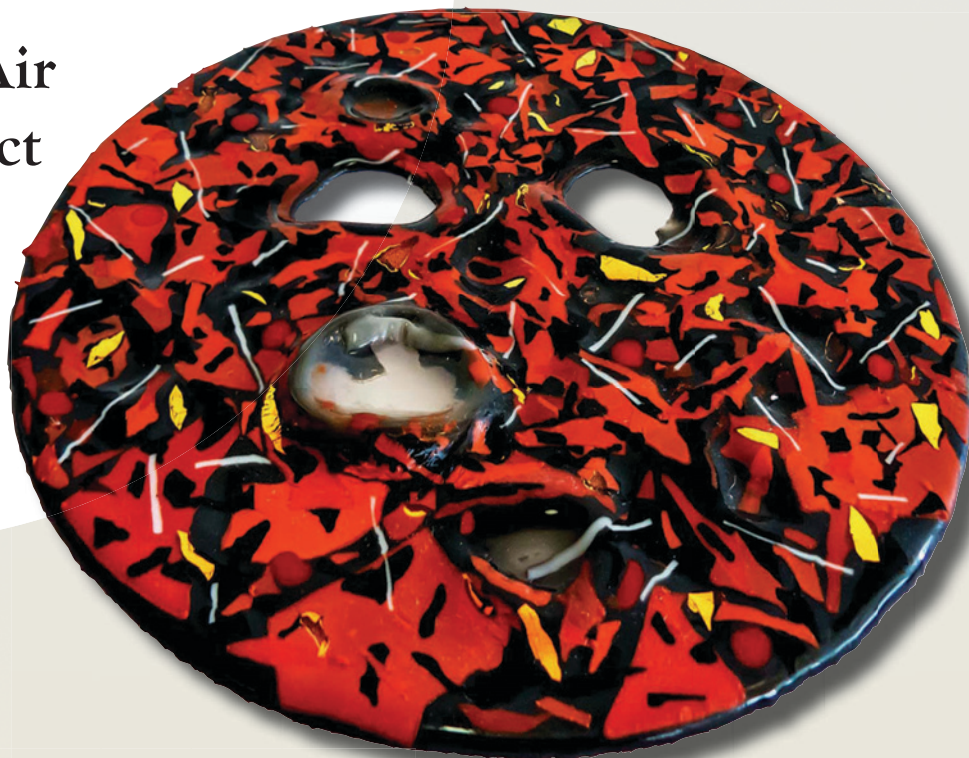
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*Design, Fabrication, and Text by Paul Tarlow*

## Avoiding Trapped Air between Your Project and the Kiln Shelf



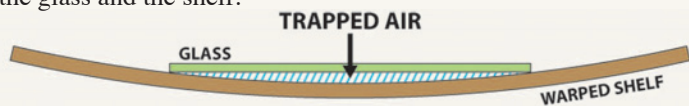
Excessive trapped air can ruin a fused glass project. When the air is trapped between the project and the shelf, the result can be large, fragile bubbles in the work or, just as bad, huge gaping holes where bubbles have popped. This article explains how to eliminate those bubbles.

### Common Causes for Trapped Air

There are a number of reasons air becomes trapped under a project. Here are the most common causes, along with some solutions.

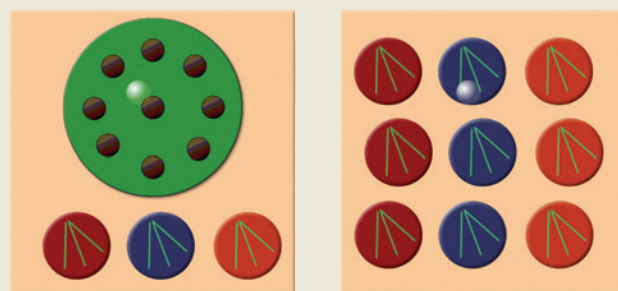
#### Defective Shelves

There are two kinds of shelf problems that can lead to bubbles. Over time, shelves can bend almost imperceptibly. This is especially true of large shelves. When a shelf warps, air is trapped between the glass and the shelf.



Shelf scratches and gouges are the second type of shelf defects that can cause unwanted bubbles. These can occur from scraping off primer or removing glass that has stuck to a shelf.

Bubbles that result from shelf defects can usually be diagnosed by paying attention to where they occur relative to the shelf. Take a look at the position of the bubble in the illustrations below. Because the bubbles occur at the same location on the shelf, regardless of the project, there is a very high likelihood that the problem is with the shelf.



If you suspect that you have a defective shelf, try flipping it over. Shelves that warp down so that the top surface is concave will trap air. Shelves that warp slightly in the opposite direction, as shown below, usually don't cause problems.

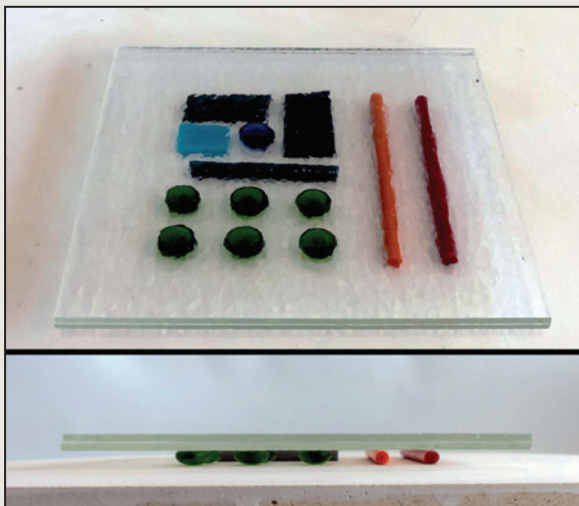


#### Side Heat

For a kiln using side heat, the glass at the edge of the project tends to melt first. This can result in the edges of the project sealing against the shelf before air has escaped from under the project. If your kiln allows you to switch between top and side heat, using only top heat is an obvious solution to this problem.

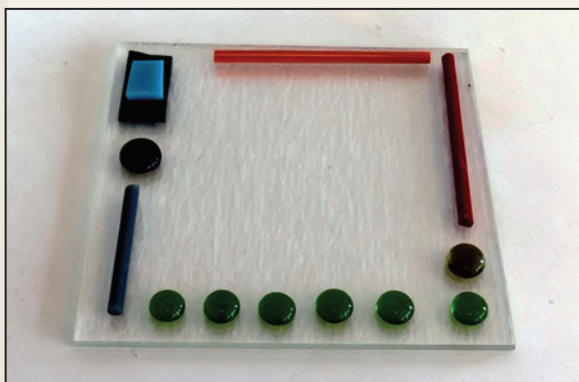
### *Design Elements Below the Sheet Glass*

Firing a project with deep texture or loose pieces on the bottom provides ample opportunity for air to be trapped under the project. Here's an example of a project that is certain to create disastrous bubbles.



### *Projects with Extra Weight Near the Edges*

As glass heats up, it sags under its own weight. When a project is designed with more weight near the outer edges, the glass will tend to seal against the shelf. If this happens before the glass in the middle has fully settled against the shelf and pushed out the excess air, you are at risk for a large bubble. This is similar to the side heat problem described above. Here's a photo of a project that risks trapping air between the shelf and the glass.



### *Large Projects*

Reducing the risk of bubbles between the shelf and the glass comes down to eliminating air from between the shelf and the glass. The wider a project is, the farther the air must travel to escape. With a 6-inch-wide (15 cm) project, the farthest that the air needs to travel to escape from under the glass is only 3 inches (8 cm). With a 12-inch (30 cm) project, the air needs to travel twice as far.

### *Combined Causes*

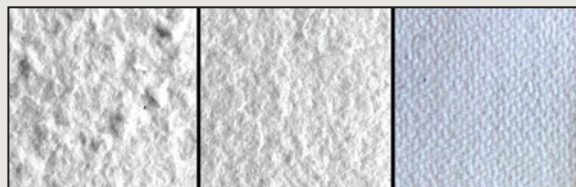
The risk of trapped air under your glass increases dramatically when multiple risk factors are present. For example, firing a large project in a kiln with side heat is far more likely to produce large bubbles than just a large project or just side heat. The good news is that the strategies for eliminating air that is trapped under your glass can also be combined for greater success.

## **Avoiding Bubbles Between the Kiln Shelf and Glass**

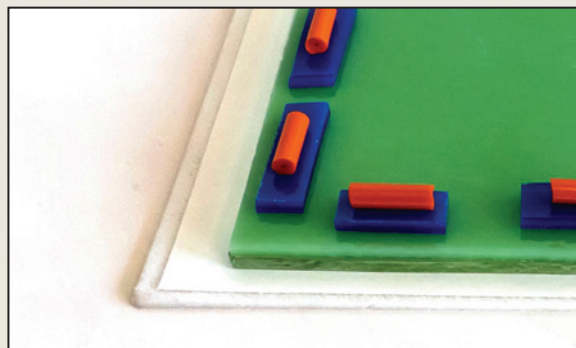
Now that you know why air gets trapped beneath glass and that bubbles can ruin a project, how do you avoid that? There are a number of techniques you can put to work. When you understand the causes, you can choose the strategies that are most likely to succeed.

### *Provide a Path for the Air to Escape*

When air expands, it looks for the path of least resistance. When the air is trapped between a rigid kiln shelf and molten glass, the glass is going to move. One strategy is to provide the air with a path that provides less resistance than pushing the glass into the air. We can do this with fiber paper.



By firing your project on top of ceramic fiber paper, you eliminate the risk of trapped air between the shelf and the glass. That's because it takes more energy for the air to create a bubble than to escape through the porous fiber paper.



There are three downsides to this approach. First, when fiber paper binder burns away, the carbon (smoke) can cause hazing and/or devitrification on the glass. Second, fiber paper leaves a different texture on the bottom of the glass than does a smooth, kiln-washed shelf. Third, firing on fiber paper adds an additional expense to your project.

The first problem, hazing and devitrification, can be addressed by prefiring the fiber paper to 1000°F before firing glass on it. This allows the binders to burn away without contaminating the glass. Prefired fiber paper is less durable, however, and if possible, it should not be moved. Here's a firing schedule for prefiring fiber paper.

- Segment 1: Ramp 500°F/hr to 1000°F and hold 30 min.
- Segment 2: Off.

The second downside, unwanted texture on the bottom of your work, can be minimized by placing a piece of shelf paper on top of the fiber paper. While this does not completely eliminate texture on the glass, it does minimize it.

The third issue, cost, can be minimized by reusing fiber paper in multiple firings. This requires using fiber paper. Fiber paper comes in different thicknesses and 1/8-inch thick (3 mm) or thicker usually can be used for multiple firings.



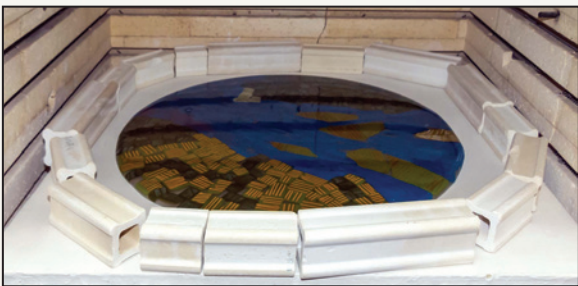
To prepare fiber paper between firings, carefully vacuum off any shelf paper that may remain. Doing this without disturbing the fiber paper takes some practice. Hold down the edge of the fiber paper with your hand or a strip of kiln furniture to minimize the risk of the fiber paper being sucked into the vacuum. Hold the vacuum nozzle parallel to the shelf to vacuum up just the remains of shelf paper, as shown in the image above.

Once the fiber paper has been vacuumed, gently roll it flat. A heavy cardboard tube is ideal for this task. Do not use a heavy rolling pin or anything that will overly compress the fiber paper. With fiber paper under your project, even highly textured projects, fired face down, will not result in bubbles between the glass and the shelf.

**SAFETY ALERT:** Whenever you are working with ceramic fiber products, always wear an appropriate respirator and use a HEPA-rated vacuum. Most ceramic fiber products are more hazardous after being fired than before.

### ***Baffle Side Heat***

Side heat in a kiln can result in the edges melting ahead of the center of the glass project. That, in turn, causes a “seal” around the project’s perimeter while air is still trapped beneath the project’s center. An effective method for reducing that is to “baffle” the side heat so that it acts more slowly on the glass. The glass in the kiln shown below is protected by a baffle of kiln furniture around the project.



### **Firing Schedules**

When determining a project’s firing schedule, there are two opportunities to reduce the risk of bubbles. The first occurs at bending temperatures during a stage called the bubble squeeze. The second opportunity is at full fuse.

#### ***Bubble Squeeze***

Glass is heavy. By spending extra time in the slumping range, the weight of the glass will help the glass settle against the shelf and allow the layers to settle together, squeezing out the air that might otherwise be trapped. A common approach to a bubble squeeze is to hold at 1225°F for 30 minutes. An extreme bubble squeeze can last two hours or more. Here is an example of where the bubble squeeze, shown in Segment 2, appears in a typical firing schedule.

- Segment 1: Ramp 300°F/hr to 900°F and hold 15 min.
- Segment 2: Ramp 100°F/hr to 1225°F and hold 30 min.
- Segment 3: Ramp 9999 (AFAP\*) to 1500°F and hold 10 min.
- Segment 4: Ramp 9999 (AFAP\*) to 950°F and hold 90 min.
- Segment 5: Ramp 75°F/hr to 725°F and no hold.
- Segment 6: Off.

\*as fast as possible

### **Not Going Hotter than Needed**

For many projects, a full fuse of 1450°F held for 10 minutes will produce the same flat surface as a full fuse of 1525°F held for 20 minutes. That’s because once the surface of the molten glass is smooth, it doesn’t change much. Trapped air, on the other hand, continues to expand and rise as the temperature rises and so long as the glass is molten. The hotter and longer the full fuse is, the more likely that trapped air will cause problems.

By looking into the kiln and observing your glass at fusing temperatures, you can see when the surface texture of the glass has smoothed out. Once that is achieved, you can skip to the next segment in your schedule. Here are some safety considerations when looking into a hot kiln.

- Always wear appropriate clothing and safety gear. All clothes should be natural fiber such as cotton or wool, since artificial materials such as polyester or rayon can melt and stick to your skin.
- Take off any jewelry that could get hot.
- Wear appropriate safety glasses. Light tint (shade 3) welding glasses are recommended.

When you look into a kiln at fusing temperatures, all of the glass will appear as shades of red and orange. This can make it very difficult to resolve what you are seeing and whether the surface of the glass is flat. By focusing on the reflection on the glass from the heating elements in the lid and noticing if the reflection is distorted, most people find it easier to evaluate the surface of the glass.

### **Wrap Up**

The above information should help you avoid bubbles that occur when air is trapped between your project and the shelf. The next step is to manage bubbles that result from air trapped between layers of glass. Here’s a quick tip that you can put to use right away. Two of the methods described here—adding a bubble squeeze to your firing schedule and baffling side heat—will also reduce bubbles between glass layers. Happy fusing!

**GPO**

*This article was adapted from information that originally appeared in Paul Tarlow’s e-book, Ending Fused Glass Disasters.*

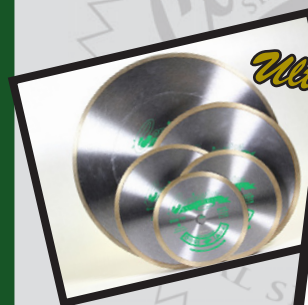


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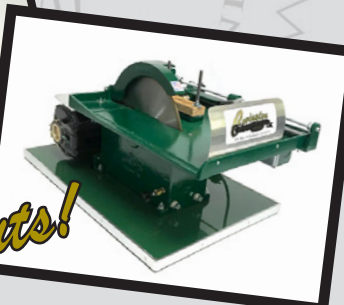


Paul Tarlow, who is widely acknowledged as an authority on kiln formed glass, has written a series of e-books on a wide range of topics related to kiln formed glass available at [fusedglassbooks.com](http://fusedglassbooks.com) and is known to be a generous instructor. He also runs [www.fusedglass.org](http://www.fusedglass.org) as well as Fused.Glass, a closed corollary Facebook group, at [www.facebook.com/groups/fusedglass](http://www.facebook.com/groups/fusedglass).

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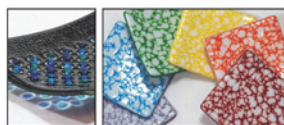


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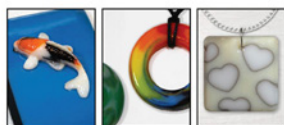
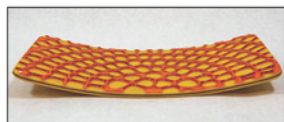
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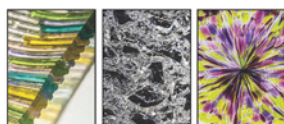
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# Mistakes to Avoid in Maintaining Your Glass Kiln, Part One

by Arnold Howard

In working on kilns at schools and studios, I often find errors made during previous repairs. The photos shown here are from the kilns I've worked on.

Always take your time when you work on your kiln. Never rush through a repair. Preparation for the repair sometimes takes far longer than the repair itself. Avoid making these mistakes and watch for them in used kilns that you are evaluating for purchase.

- **An enlarged thermocouple hole.** The thermocouple is a small rod that measures the temperature inside a kiln. (Photo 1) It goes into the firing chamber through a hole in the kiln wall. If that hole is enlarged, air will pass around the thermocouple and change the temperature reading. You can correct this by stuffing the hole with ceramic fiber. (Photo 2)

- **Crimp cap and wire terminal failure.** A crimp cap is a brass barrel that holds electrical wires together. After the cap is crimped, a nylon cover is inserted over the cap to insulate the wires. The Buchanan crimp cap is far more secure than the wire nuts found in older kilns.

When installing a crimp cap or a wire terminal, avoid getting insulation from the wire inside the cap or terminal. The insulation can weaken the connection, because it creates a gap between the wire and the cap or terminal. A weak electrical connection in a kiln eventually overheats. (Photo 3)

- **Debris in the element grooves.** When an element burns out due to contact with glass particles or glass separator, remove the debris in the groove from the old element before you install the new element. The debris can contaminate a new element.

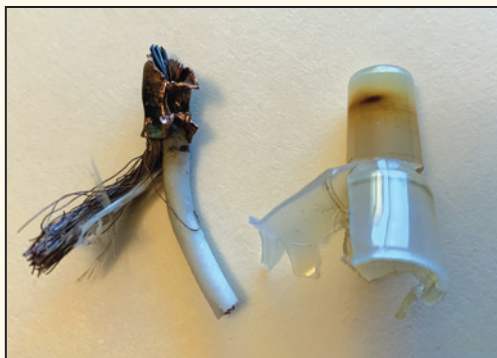
Photo 4 shows the debris from a previous element hidden under the one I removed. The previous element had failed where the coils had bunched up and overheated. The coils were so hot that they ate into the firebrick groove.



(Photo 1) Notice how large the hole is where the thermocouple enters the firing chamber. The gap around the thermocouple allows air to change the accuracy of the temperature reading. The thermocouple should have a snug fit. The hole in this picture may have held a wider thermocouple that was replaced with a thinner one.



(Photo 2) You can stuff an enlarged thermocouple hole with ceramic fiber to prevent the flow of air around the thermocouple.



(Photo 3) After I replace a part, I often cut it open to find out what caused it to fail. In this case, the insulation from the thick wire on the right was up inside the brass connector barrel, creating a gap that prevented a good connection between the wires. You can see the heat damage on the nylon cover.



(Photo 4) After removing an element, I found particles from a previous element that had been left in the groove. You can see coils from the previous element in the photo. Always take the time to dig out metal particles, glass, or darkened areas of the groove before installing new elements.

Sometimes firebrick and clay particles accumulate in the brick grooves, reducing the efficiency of the elements and preventing them from dissipating the heat. This causes elements to fail prematurely. (Photo 5)

- **Bunched up element coils.** In many front-loading kilns, the elements each take up two rows of grooves. The grooves curve downward in a semicircle to the next lower groove. The element coils tend to bunch up at the bottom of the curved section, causing the element there to get too hot and burn out. (Photo 6 and 7)

When replacing an element that has a semicircular groove like the one shown in photos 6 and 7, place three element pins in the groove. Evenly space the element pins to prevent the coils from forming a cluster at the bottom of the curve.

- **An enlarged element hole.** Elements have two twisted ends that are inserted into holes in the kiln wall. Be careful not to enlarge the holes. This can allow heat into the kiln's switch box and burn out electrical components. (Photo 8)

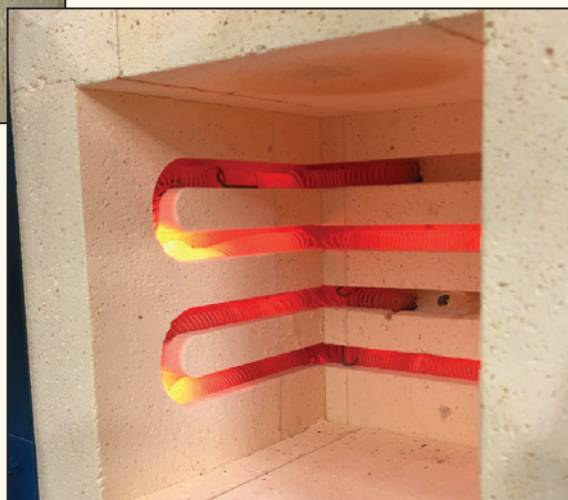
I learned about the enlarged element holes from Mike Glotfelty of Jen-Ken Kilns. Thank you, Mike. **GPO**



(Photo 5) The element here is half buried in firebrick particles. This reduces the heating capacity of the elements and slows down the kiln. Occasionally vacuum the firing chamber. Always wear a dust mask when vacuuming your kiln. Keep the vacuum nozzle away from the thermocouple and controller to avoid damage from static electricity.



(Photo 6) Notice how the element coils have bunched up in the bottom of the groove where it curves in front of the kiln door. Bunched element coils get too hot. You can reduce this by inserting three evenly spaced element pins in the curve.



(Photo 7) In this photo, you can see that coils pressed together get hotter than the rest of the element. That section of the groove glows brightly.



(Photo 8) This is the firebrick hole where the element goes through the kiln wall. If the hole is enlarged, heat will build up inside the kiln's switch box, causing the element connectors to become too hot and fail prematurely. An enlarged hole is usually oval shaped like this one.

While Arnold Howard worked at Paragon Industries, he saw kiln controls evolve from switches to touch screen displays, tested the early glass kilns, and wrote instruction manuals. Arnold now owns Howard Kilns, LLC, a kiln repair and sales business and works on all brands of electric kilns. Feel free to contact him at [arnoldhoward@gmail.com](mailto:arnoldhoward@gmail.com) or call/text (972) 333-1437.



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# Introducing a new addition to the Cress line of Glass Kilns

## Our GL717B is the Ultimate Kiln for the home fuser

### Patty Gray

In my 30 years of working in kiln-formed glass I have used many different manufacturers' kilns. I have been fortunate to have Cress Kilns in most of my classes because reliability and consistency is critical to a successful class. Cress kilns has been open to suggestions, I talked to them about building a kiln for both home studio use and classes that runs on a 120v/20amp circuit. They listened to my input about size and design and built the GL717B. This kiln is large enough to fuse and slump 15" bowls, and I can fuse eight of my 6"x 6" molds.



- Generous 17" x 17" x 6.75" Interior
- Easy to open, 2.5" thick fiber lid with a strong lid brace and locking mechanism
- Firebrick brick floor and sides with dual heating elements, for perfect heat distribution
- Comes standard with the user-friendly Bartlett 3 key digital controller
- Cress digital controller has room for 4 programs with 8 segments
- Slanted control panel for easy use and view
- Superior riveted steel casing with solid handles make it easy to move
- Long-lasting solid-state relays
- Requires a 30 amp 120 volt outlet

Model	Volts	AMPS	Temp.	Inside Dimensions	Outside dimensions	Plug type
GL717B	120 VAC	18	1700 °F	17X17X6.75"	31" W x 25" D x 21"H	5-20P



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Email [info@cressmfg.com](mailto:info@cressmfg.com)

# Wissmach Luminescent Glass



Craig Mitchell Smith uses  
Wissmach Luminescent Glass  
for his new *Grace* series.

“Only Wissmach Glass can  
give me the soft, graceful curves  
I love. It drapes beautifully in  
the kiln, Wissmach is the  
perfect glass for me.”

*Craig Mitchell Smith, Grace*  
Photography by Randy Blankenship



[www.WissmachGlass.com](http://www.WissmachGlass.com)