

# GLASS PATTERNS

• Q U A R T E R L Y<sup>®</sup> •

Fall 2020

Volume 36 • No. 3

Autumn  
Halloween  
Holiday &  
Christmas



Volume 36 No. 3

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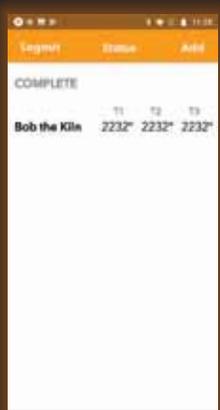


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Above: ETA Halloween by Paned Expressions Studios.

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and Scallop and Pearl window by Chantal Paré.

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*Above: Candy Cane Wreath  
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### Upcoming Submission Deadlines

**Spring 2021** *DIY Home Decor, Lighting, Tiles, Tables, and Wall Art*

Editorial November 1, 2020

Ad Closing January 20, 2021

Ad Materials January 30, 2021

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Ad Closing July 20, 2021

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# Believe

## An Introduction to Stained Glass

Design, Fabrication, and Text by Pat Chase

Photography by Emily Grant

Emily Grant and Michelle Lawson, Computer Assistants



This 8" x 12" angel, "Believe," is from my second edition of *Angel Companions*. I chose to make her with dark skin and hair as a tribute to the Black Lives Matter movement. At a medium skill level, she is a simple design with 39 pieces. I used bold dress options to show strength and compliment her dark skin with pleasing results.

During these difficult times, when socialization is not possible, I found comfort and solace in my art. It has been a time of reflection and growth. Many of us are finding new ways to be productive and learn new things. We are gardening, sewing, baking, and crafting to cope with our time in isolation and social distancing. Creativity of any type is important to our mental health and well-being, especially in this stressful time.

So let's create!

To begin, make two copies of your pattern. Cover one of the copies with clear contact paper. You will be placing the cut and foiled glass pieces onto the covered pattern using UHU tac as you assemble the design.

### Glass

Terra Cotta Opal for Skin, 2" x 3"

Mimosa for Dress, 9" x 6"

Red/White Iridized Wispy  
for Sash and Collar, 8" x 4"

Clear/White/Pink Iridized Wispy  
for Wings, 9" x 9"

Dark Brown for Hair, Scrap

Textured Yellow Translucent for Halo, Scrap

### Tools and Materials

Glass Cutter Grozier/Breaking Pliers

3/16", 7/32", or 1/4" Copper Foil

18- to 20-Gauge Copper Wire

Black Sharpie® Marker Contact Paper

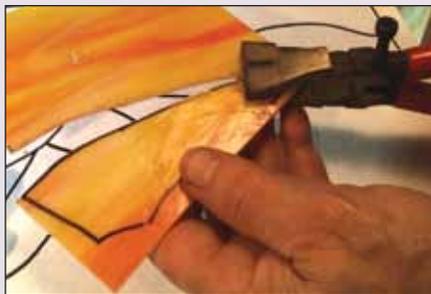
Glue Stick UHU Tac 0000 Steel Wool

1  
*Trace the pattern pieces onto the glass with a Sharpie marker, then score the lines with a glass cutter.*



Here are some tips for cutting the glass. When cutting out opaque faces and hands, use a paper pattern piece that is attached to the glass with a glue stick. When using glass with a texture, reverse your pattern and cut on the smooth side.

2  
*Use breaking pliers to separate the individual pieces.*



3  
*Grind all of the pieces to ensure a better fit.*



4  
*Foil each piece and assemble the glass pieces on the Contact covered pattern.*



Apply the UHU Tac to the backs of the glass pieces to hold them in place on the pattern. Only a small amount is needed, and it's reusable.

5  
*Tack-solder the glass pieces together, then finish-solder all the seams on the front side.*



6  
*Make a hanging loop with a 2" piece of 18-20 gauge copper wire and attach between the head and wing.*



Twist the copper wire using two grozing pliers, one on each end of the copper wire, to twist and make the loop. Trim to fit the small seam on the back side. Tin with a hot iron before soldering the hooks onto the design.

7  
*Finish-solder all of the seams on the back side.*



Buff the soldered seams on the front and back of the panel with fine-grain steel wool. To finish, clean the panel, apply black patina to the solder lines, and polish the piece.

**GPO**

*Pat Chase has been creating stained glass art since 1997, when she began working out of a studio in Maltby, Washington. She trained under Deverie Wood, who gave her invaluable guidance when Pat began to publish her own designs. Her first angel pattern, "Grace," was created for Christmas 1999 and led to the beginning of Pat's angel pattern collections. As Pat shared recently, "The positive response I have received has given me the passion and encouragement to continue with this artwork all these years. I love what I do!" Her Angel Companions and Angel Companions II pattern collections are both available by visiting [www.AngelGlassArt.com](http://www.AngelGlassArt.com) or by contacting Pat directly at [ponygal67@gmail.com](mailto:ponygal67@gmail.com).*



*Pat and Stephen, her husband of 50 years, have been keeping busy at home in Port Hadlock, Washington, with their three cats as they garden, cook, bake, and listen to their favorite Bluegrass music. While they miss their friends and family dearly, they have been keeping healthy and isolated. They are grateful for their angel guides who have been watching over them.*

# Whooo's There?

*Design, Fabrication, and Text by Leslie Gibbs*

Photography by Jon Gibbs



Owls conjure up images of knowledge and success, and they are often used as symbols of achievement and academic accomplishment. Of course, we are also familiar with both this wise bird and the carved jack-o'-lantern through their spooky association with eerie Halloween traditions.

I relate on a personal level to the term “night owl,” a bird that stays awake when the rest of the world sleeps. I’m sure that many of you fit into that group too. I get so much more accomplished late

at night when the phone does not ring, no one comes to the door, there are no meetings to attend (other than Night Owls Anonymous), and it’s just me, my drawing table, and a sleepy cat who doesn’t give a hoot!

Whether you are an early bird or the nocturnal fowl, I hope you will enjoy creating this 10" circular autumn design celebrating two of our favorite fall icons.

### Bullseye Glass Co.

0206 0030 Elephant Gray for Outer Eye Band and Inner Long Feathers, 4" x 4"

001025-0031 Light Orange Iridescent for Moon and Beak, 2" x 2"

001125-0051 Orange Iridescent Thin for Inside Shading for Eyes, Nose, and Mouth, 4" x 4"

000320-0050 Marigold Yellow Thin for Jack-O'-Lantern Inner Glow, 4" x 4"

000118-0030 Periwinkle for Panel Border, 8" x 4"

0001000-0051 Thin Black Iridescent for Talons, Scrap

### Additional Glass

Dark Gray Iridescent Cathedral for Top of Head, Under-Eye Circles, and Outer Feathers, 3" x 6"

Purple Iridescent Streaky for Background Sky, 8" x 8"

Gray Streaky Iridescent for Chest Feathers, 4" x 4"

Orange for Jack-O'-Lantern Body, 5" x 9"

### Tools and Materials

X-Acto® Knife Toothpicks Cotton Swabs

Scissors Small Craft Scissors Tweezers

5/32" and 3/16" Silver-Backed Copper Foil

Flux Flux Remover Homasote Board

Kem-O-Pro Polishing Wax Old Toothbrush

Horseshoe Nails Soft Cloths Black Patina

U-Channel Zinc or Lead Came

Hanging Hooks 60/40 solder Fiber Paper

Lead or Wire Cutters Aluminum Pushpins

Silver Sharpie® Black Sharpie®

Taxidermy Eyes (optional)

The eyes can be created in several ways—fusing, painting, or the way I chose, which was to use taxidermy eyes. If you choose to do that, use eyes with a flat back and no wires with a 3/8" bright yellow iris. I shaped mine using the grinder to fit the pattern. Many glass retailers carry them, but you can also find them on Amazon.

The orange inside shading of the jack-o'-lantern's "carved" features, along with the yellow glow coming from inside the lit pumpkin, are made with thin glass to give dimension to that shrewd squash.

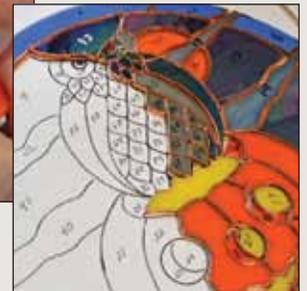
3



Grind each section of the cut glass as needed.

When it comes to the feathered chest, you will be glad you numbered each piece.

4



Foil all of the glass sections and place them on the layout pattern.

You may have to use your X-Acto knife or some small scissors to trim the foil for the eyes and the thin glass. You do not need to foil the outer edge of the border sections, since they will be wrapped in U-channel zinc or lead came.

5

Using the aluminum pushpins, brace the foiled panel in place so the glass does not shift during soldering.



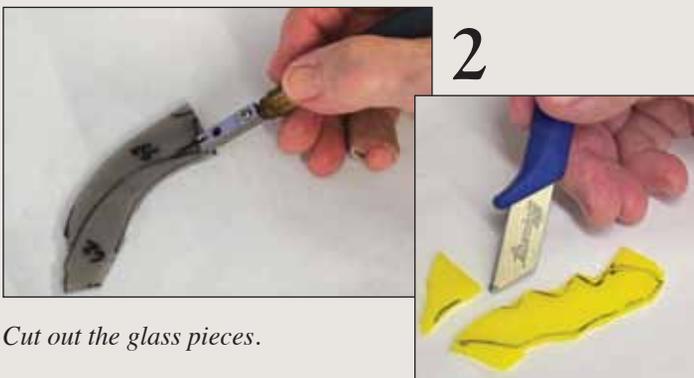
Moving some of the smaller sections into place can be tricky. I use a toothpick for that.

1

Make two copies of the pattern, one for layout and one to cut, and number each section of both patterns.



2



Cut out the glass pieces.

6

*Flux and solder the panel.*



Beginning with the front of the panel, carefully apply flux to the panel, then solder the panel together. Flip the panel over and solder the back.

7

*Frame the panel.*



You can frame the soldered panel in U-channel zinc or lead. Wrap the framing carefully around the panel and secure it in place using horseshoe nails. Solder the framing wherever it meets a border line on both sides.

8

*Create the talons.*



The talons are cut from thin black glass that is ground into shape, foiled, and soldered on both sides. It is then cleaned and soldered to the lower body of this wily predator. The talons are tiny, and you will probably be concocting colorful profanities about me during the process.

A few things will help to make this part easier. First, cut the foil to make it thin and place a small bit of fiber paper beneath the talons to keep them flat while soldering. Use tweezers to grip the tiny talons and solder each one in place. Finally, remove the supporting fiber paper, and you're done!

9

*Add hanging hooks, if desired.*



If you choose to use hanging hooks, they can be soldered directly onto the zinc. If you're using lead, however, solder small round hooks discreetly onto the upper border lines on either side of the owl's head, not onto the lead.

10

*Apply the patina onto both sides of the panel and the framing.*



For tight areas, I apply the patina using a cotton swab. Rinse off the excess patina and let the panel dry.

11

*Wax and polish the panel.*



Using a soft cloth, apply the Kem-O-Pro wax to the front of the panel, let it dry to a haze, then apply wax to the back of the panel. When the wax dries, carefully polish the panel with a clean, soft cloth. An old toothbrush is great for removing wax from tight areas.

There, you have completed this "owlsome" project. Owl you needed was love—and maybe some Band-Aids. Don't hate me for the owl puns. It's just whooo I am, and I don't give a hoot!

**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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AANP-02

AANP-13

## Bracelets



AANP-08

AANP-09

## Ring



AANP-10



AANP-14

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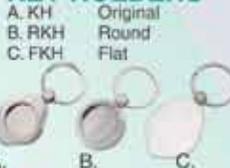
A. B. C.

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

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 925L Large  
 925M Medium  
 925S Small

### Earring Bails



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

### Pattern Bails



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 B. SPBL-H Hashmark  
 C. SPBL-L Leaves  
 D. SPBL-T Tortoise  
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# Rainbow Mandala Dream Catcher

*Design, Fabrication, and Text by David Kennedy*

Photography by Sharon Kennedy



Sometimes referred to as “Sacred Hoops,” dream catchers were traditionally used as talismans to protect sleeping people from bad dreams and nightmares. When hung above the bed, the dream catcher attracts and catches all sorts of dreams and thoughts into its webs.

In this 12-inch design, I have replaced the web with a rainbow mandala to reflect the uncertain times we now live in. Hopefully our good dreams will pass through, and the nightmare of Covid-19 will be caught up in its protective net and be destroyed, burned up in the light of day.

**Wissmach Glass Co.**

***Dream Catcher***

51-DDXXM Iridized Opal/Crystal for Background, 1 Sq. Ft.

WO-051 Irid White Opal Wispy for Feathers, Scrap

***Mandala***

Dew Drop-01 Textured Iridized for Mandala Background, 1/4 Sq. Ft.

***Mandala Petals and Center Jewel from Scrap***

241 Dark Purple Mystic Cathedral

158 Medium Copper Blue Mystic Cathedral

18-L Orange Cathedral

EM348 Midnight Blue English Muffle

EM343 Green English Muffle

EM310 Dark Amber English Muffle

EM180 Red English Muffle

51-DDXXM Iridized Opal/Crystal

for Mandala Center Jewel

***Additional Glass***

Sky Blue/Steel Waterglass

for Dream Catcher Feathers, 1/4 Sq. Ft.

***Tools and Materials***

7/32" Copper Foil Burnishing Tool

50/50 Solder 60/40 Solder

4 X 4 C- or U-Channel Lead Came

3/4" Grinding Bit Water Soluble Flux

Tinned Copper Wire 0.5 mm Chain

Fine-Tipped Permanent Marker Pen

Small Paintbrush Stiff Brush

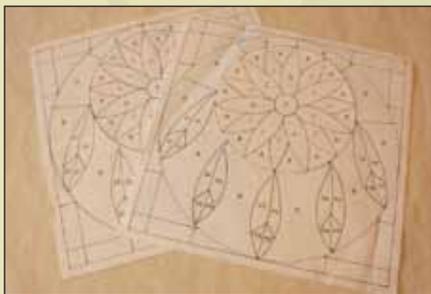
Dish Detergent Black Patina

Soft Cloth 0000 Steel Wool

Hooks (optional)

Start by making two copies of the pattern, one for using as a template and one for cutting out the glass pieces.

1



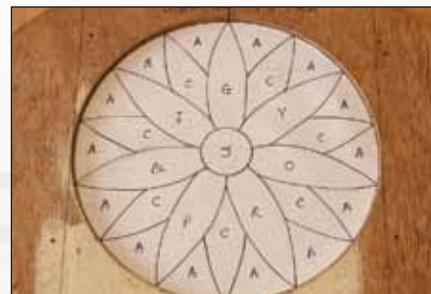
Prepare a jig for building the panel.

2



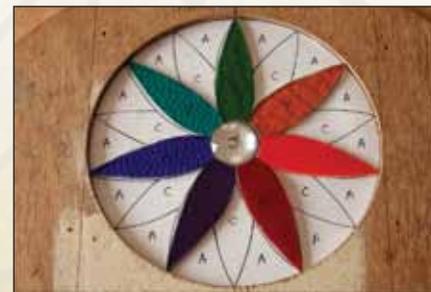
Prepare a 7-1/2"-diameter jig, cut out the mandala pattern, and place it in the jig.

3



Cut out the glass pieces for the colored petals and center jewel.

4



Use a piece of scrap Iridized Opal/Crystal to cut a 30 mm-diameter circle for the center jewel and place the petals around it.

5



Next take the iridized Opal Swirled with Crystal and cut the petals on the marked C on the pattern.

6



Add the pieces marked A using the Clear Iridized Texture.

7



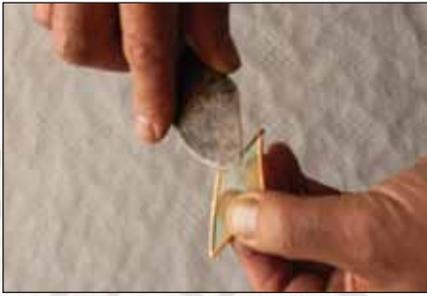
With all the pieces of the mandala section cut, begin to foil the glass pieces.

Remove the pieces from the template one at a time, apply the foil, and replace. Make any necessary adjustments as you proceed.

Mine is approximately 12 inches in diameter. The finished panel will be hung in a window, and the jig will produce a nice, neat finish.

8

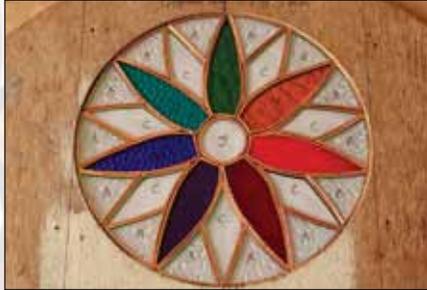
Make sure the foil is well burnished onto the glass edges.



I find that a putty knife is excellent for this procedure. Replace in the jig and make any adjustments as you proceed.

9

Place the jewel on top of the circle to make it stand proud.



The mandala section can now be set aside for the moment.

10

Moving back to the main panel, cut out the background glass pieces.



11

Cut the feathers using the dark blue glass.



Angle the pattern to gain the maximum effect from the grain of the glass.

12

Apply flux to the seams of the mandala section and solder them flat using 50/50 solder.



Remove the mandala from the jig and place it in the main section. There is no need to solder the reverse side at this point.

13

With the feathers cut and the mandala in place, cut and place the remaining background pieces.



14

Foil all of the remaining pieces.



There is no need to foil the outer edge, since the lead came will cover that. Complete the soldering of the whole panel.

15

Remove the panel from the jig and repeat the fluxing and soldering process on the reverse side.



Make sure to place a soft cloth under the jewel to prevent damage.

16

Frame the panel with C- or U-channel lead came.



Stretch a length of C- or U-channel lead came and cut a length approximately 39 inches for a 12"-diameter panel. This can be eased around the outside edge to provide a nice, neat finish.

17

Complete the soldering.



Reapply flux to the seams and use 60/40 to bead-solder to the panel on both sides. Hooks can now be added.

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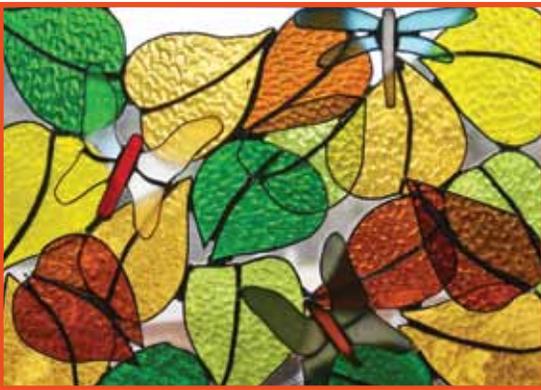
# Fall in Love With Glass Art



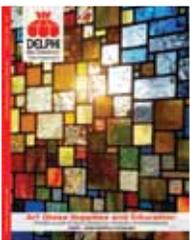
Artist: Jennifer Kuhns



Artist: Olena Sidlovych



Artist: Vernon De La Vergne



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## 18

Once all the soldering is complete, thoroughly clean the panel with 0000 steel wool.



This will remove all of the flux and solder residue and improve the patination process.

## 19

Use a small paintbrush to apply the patina to the seams.

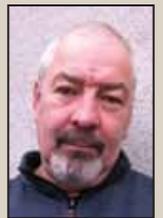


Let the piece dry for a couple of hours, then give the panel a final clean and polish. The completed panel can now be hung in a window of your choice.

**GPQ**



David Kennedy began his stained glass journey in 1984. After mastering the basics, he moved on to art glass, which has now become his passion. The artist doesn't use plating or painting techniques, preferring instead to take his inspiration from the glass itself.



David is now in the process of publishing his original designs on [Etsy.com](https://www.etsy.com) with the help of his wife Sharon. They live on the Hook Peninsula, located in a rural historic southeastern section of Ireland, where he produces panels and designs in his own unique style.

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Stained Glass Designs



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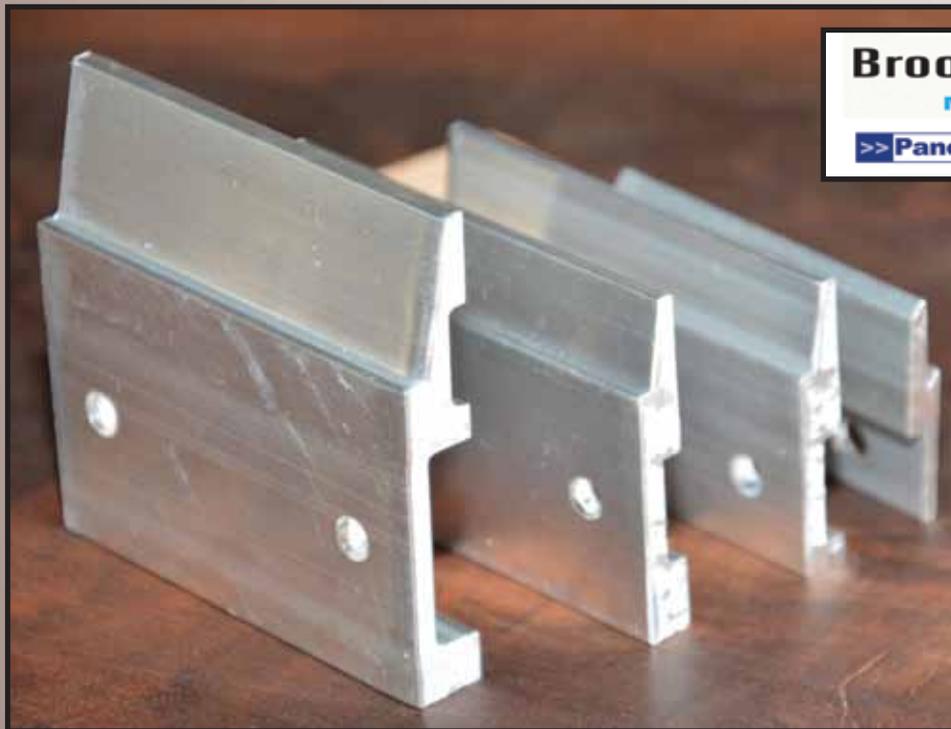
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# Pumpkins and Gourds

*Design by Mary Harris, Text by Darlene Welch*



Fall is the time of year when our thoughts turn to trees becoming brilliant shades of red, orange, and gold. A bumper crop of pumpkins and gourds can't be far behind. The beauties in this stunning 24" x 13-1/2" stained glass design by Mary Harris will make a perfect addition to your fall and Thanksgiving decor.

Mary has been creating traditional and innovative stained glass art since 1979. Her true-to-life style has evolved from drawing and implementing custom patterns in stained glass and sandblasting to discovering new ways to merge traditional and hot glass techniques. Her work has been recognized year after year by the Association of Stained Glass Lamp Artists as well as in the Gallery of Excellence at the Las Vegas Glass Craft & Bead Expo. Visit [www.bestglasspatterns.com](http://www.bestglasspatterns.com) to find more patterns by Mary.

**GPQ**

## **Wissmach Glass Company**

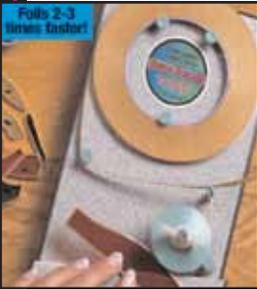
- WO-17 White Opal/Red/Orange Wispy  
for Large Pumpkin, 1/2 Sq. Ft.
- 317-D Dark Amber/Dense Opal for Small Pumpkins, 1 Sq. Ft.
- 78-L Medium Amber/Green/Light Opal/Crystal  
for Large Gourd, 1/2 Sq. Ft.
- 145-SP Dark Amber/Crystal for Small Gourd, Scrap
- 315-D Medium Amber/Dense Opal for Tall Gourd, Scrap
- 155-LL Dark Purple/Green/Light Opal/Crystal Streaky  
for Pumpkin and Gourd Stems, Scrap
- 223-LL Light Amber/Dark Brown Streaky for Leaves, 1-1/2 Sq. Ft.
- 23-L Light Green Light Opal/Copper Red for Leaves, Scrap
- 100-SP Dark Green/Light Opal for Leaves, Scrap
- WO-29 Dark Red/Opal/Crystal Wispy for Berries, Scrap
- 65-L Medium Brown/Blue/Light Opal for Background, 2 Sq. Ft.

## **Tools and Materials**

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

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# Quail in Flowering Desert

*Design by Jennifer Cole, Fabrication and Text by Cindy Dow Savary*

Photography by Cindy Dow Savary and Gerry L. Savary



My love of Southwestern art goes back to my childhood vacations to Pagosa Springs, Colorado, when we would always stop in Santa Fe, New Mexico. There is a certain magic about the sunsets there with their vivid, warm colors. This year, I was hoping to meet Jennifer Cole, a stained glass artist who is known for her Southwestern patterns. Unfortunately, I was diagnosed with breast cancer in March 2020, so my trip will have to wait for now. In the meantime, stained glass has been a big part of my therapy. I feel honored to be able to fabricate one of Jennifer's patterns, JC-1 "Quail in Flowering Desert," which is still available from Jennifer

at Expressions Art Glass. This will be my third time using one of her patterns.

Since 1983, Jennifer has been involved in the art glass world. When asked about her inspiration for this 27" x 18-1/2" Southwestern design, she states that it comes from the interesting desert vegetation and wildlife all around and the vibrant colors in the Arizona sunsets. Jennifer is always dreaming of ideas to put into glass—always sketching, always starting new projects, and always trying to figure out how to do something "you can't do in glass."

### Wissmach Glass Co.

WO-17 Wispy White Opal/Red/Orange for Sky, 3/4 Sq. Ft.  
WO-319 Dark Yellow Green Wispy for Cactus, 1/2 Sq. Ft.

### Bullseye Glass Co.

0145 Jade Green Opal for Cactus, Scrap  
2123 White/Orange Opal/Deep Forest Green Mix  
for Sky, 1/2 Sq. Ft.

### Additional Glass

Blue/Brown Ripple for Sky, 1/4 Sq. Ft.  
Dark Green/Opal Tight Ripple  
for Saguaro Cactus, Scrap  
Inferno Orange/Yellow/Clear  
for Sky, 1/2 Sq. Ft.  
Alpine Blue Opal for Quail, Scrap  
Yellow/White for Sky, Scrap  
Pastel Pink/White Ring Mottle for Sky, 1/2 Sq. Ft.  
Light Brown/White Ring Mottle  
for Ground Cover, 1/2 Sq. Ft.  
Clear Cathedral Radium for Quail Wings, Scrap  
White for Quail, Scrap  
Gray for Quail, Scrap  
Red/Purple for Flowers, Scrap  
Brown for Ground Cover, Scrap

### Tools and Materials

Foil Pattern Scissors X-Acto® Knife  
Toyo Pistol Grip Cutter Grinder  
Grozing Pliers Running Pliers  
Permanent Markers Push Pins  
Morton Layout Block System  
Rubbing Alcohol Paper Towels  
7/32" Black-Backed Copper Foil  
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Clear Nail Polish Alcohol Inks  
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Aanraku Foil Burnish Roller  
Nokorode® Paste Flux Kwik-Clean®  
Hakko® FX-601 Soldering Iron  
Scotch-Brite™ Hand Pads U-Channel Zinc Came  
Novacan Black Patina Handy Hangers  
JAX® Pewter Black



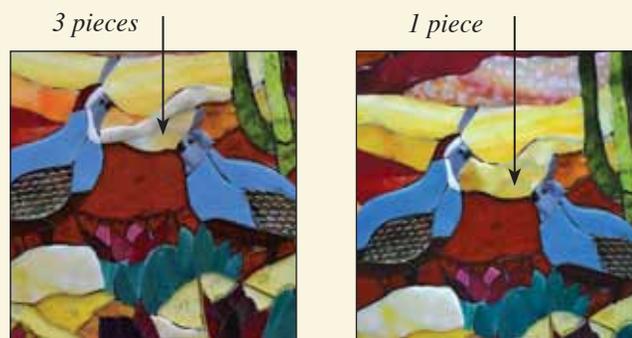
Colored pattern copy

## Preparing to Fabricate the Panel

Before you begin to build the panel, you will need to make two copies of the pattern, one to cut apart to use when cutting the pieces of glass and the other to use as a layout copy. I always start by coloring the pattern with crayons or colored pencils to get a sense of what glass colors I want to use. It also helps me to separate the pattern pieces by glass color and lets me know how much glass I need for that color.

On occasion, I make some changes to the patterns I select to use from other artists to fit my own personal taste. For this one, I decided to change the area between the quails from three pieces to one. I also decided to use a lighter color there to make the quails a strong focal point. I searched the Internet on the coloring for quails and found two different renditions. I chose the "blue rendition," since it makes them stand out.

In all of my panels, I also try to use different textures to add depth. To add more detail to the quails, I used clear radium glass, which I colored with alcohol inks and coated with clear nail polish. Be sure to reverse your pattern piece to cut on the smooth side of the glass. In one of Jennifer's book, she suggests that artists use copper foil sheets to overlay the wings. Either way, chose a technique that makes the glass "pop."



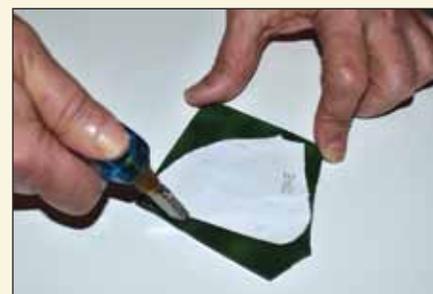
1

Cut the pattern pieces apart and glue them to the glass.



2

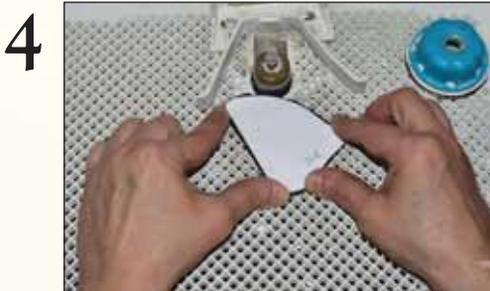
Score the glass pieces as close to the pattern as possible.



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



Grind the glass to smooth out any rough edges.



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

Assemble the pieces of glass on the layout copy.



You'll need a jig to keep the panel even and the edges straight. I use the Morton Layout System to keep all of the pieces in place.

Apply foil to all of the glass pieces.



Before foiling, clean each piece with rubbing alcohol and dry the glass. For those pieces with inside curves, first place several pieces of foil on the curve, then foil on the edge as you normally would.

Flux and solder the foiled glass pieces.



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

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



Apply Novocan Black Patina to the solder lines and clean the panel.



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

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 reach places, use cotton swabs.

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



Open the channel on the zinc came with a plastic fid or lathekin.



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# 13

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



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

# 14

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



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

# 15

Add Handy Hangers, then tin the hangers with solder.



Also apply flux and solder to the inside of the zinc came where the Handy Hanger will be secured. Add the top 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 zinc came.



This project is now complete and will make a beautiful addition to your own decor or a great holiday gift for that special someone.

**GPO**



Jennifer Cole has been working in stained glass professionally for 37 years, and she and her husband Andy have owned and operated Expressions Art Glass in Tucson, Arizona, since 1991. This full-service retail shop and studio offers classes for all skill levels. Together, Jennifer and Andy instruct students in glass fusing, stained glass, and mosaic methods.

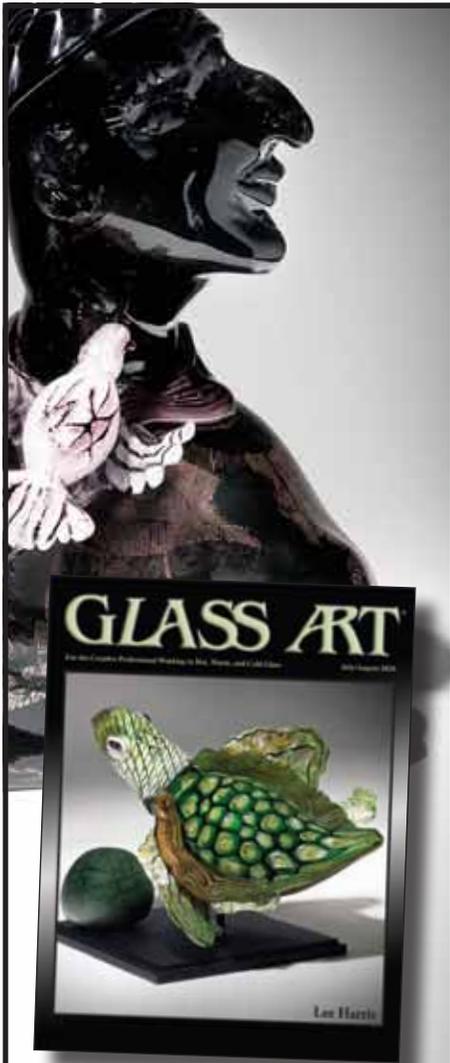
Jennifer has published several design books including Contemporary Southwestern Designs (out of print) and Southwest Designs II. She has also designed hundreds of patterns for stained glass, fusing, and mosaics that are available to order through the studio. For more of Jennifer's designs, visit [www.expressionsartglass.com](http://www.expressionsartglass.com) or call (520) 886-7720. You may also e-mail her at [jenexpressions@gmail.com](mailto:jenexpressions@gmail.com).



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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Lee Harris, cover artist for the Glass Art® July/August 2020 issue

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# Scallop and Pearl

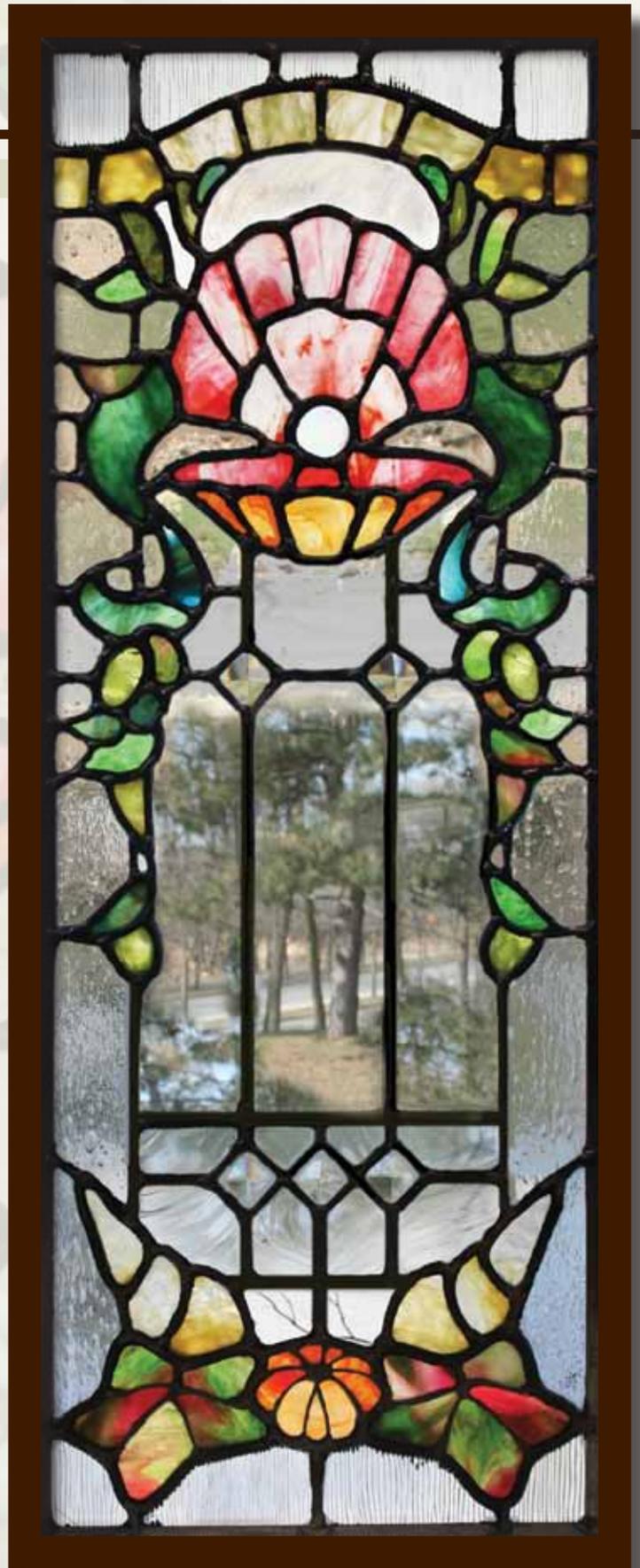
*Design, Fabrication, and Text by Chantal Paré*

The use of scallops in architectural ornamentation, especially windows, dates back to the late Renaissance in the mid 1500s, so it's not a new idea. Semicircles with curved rays and an edge were so distinctive that they inspired the word "scalloped." The shape lends itself naturally to crowning an element with vertical movement.

I wanted to add a pearl to focus the viewer's gaze as well as for a romantic effect, but before doing so I did my homework. Scallops do have pearls sometimes, and they are a matte white. The stylized scallop itself is flanked by garlands of a seaweed called "spiral wrack" or *Fucus spiralis* in Latin. The bottom of the window has an assortment of elements—an urchin, starfish, and auger snail shells—that evoke the ocean.

The center of the panel is straight float glass. When you look through it, your eye is drawn to the landscape beyond, framed by an aquatic fairy tale and extravagant, watercolor-like glass, punctuated by tiny bevels. There is something magical about a window within a window.

I made this project using lead came in various widths, because I like the formality of very straight and prominent lead lines. My recommended size for this window is 11-1/2" x 30-1/4". If you aren't proficient with lead came, note that the small pieces and curves require extra care and patience. Using only 3/16" lead H flat came, however, can make things simpler. For easier came construction, this window design can scale up very nicely—up to 1.5 times larger—or it could be made using the copper foil technique in the same size or smaller.



### Wissmach Glass Company

Iridescent Muranese Clear for Pearl, Scrap

#### Additional Glass

3 mm Clear Float Glass for Window Center, 3 Sq. Ft.

Orange for Shells, 1/2 Sq. Ft.

Pink for Shells, 1 Sq. Ft.

Green/Rose/Pink Stipple for Seaweed and Starfish, 1/2 Sq. Ft.

Yellow Stipple for Shells, 1 Sq. Ft.

Blue/Green Stipple for Blue-Green Seaweed, Scrap

Clear Rainwater Textured for Outer Border, 2 Sq. Ft.

Clear Baroque for Lower Center, 1 Sq. Ft.

Clear Cord for Outer Border, 1 Sq. Ft.

1" Square Bevels for Window Center, 4

#### Tools and Materials

14-Gauge Copper Wire Fid

3/16" Black-Backed Copper Foil

3/16" Lead H-Flat Came

5/32" Lead H-Round Came

1/8" Lead H-Round Came

3/8" U-Channel Zinc Came 60/40 Solder

Masking Tape or Electrical Tape

Soldering Flux Black Putty

Calcium Carbonate (Whiting)

Horseshoe Nails Polishing Brush

Lead Knife or Tin Cutter

Soft Mallet Light Box (optional)

1



Make a copy of the template.

2



Place the glass over the template and trace the corresponding shapes with a marker.

Trace the colored glass over a light box if you can't see the lines well enough.

3



Score and break the glass, keeping your glass cutting wheel inside the marker lines.

4



Prepare a 3-sided jig to contain the project as you lead it, using a carpenter's square to ensure perfect corner angles.

5



Use a miter saw to cut out a frame from the 1/2" U-channel zinc came.

6



Set three sides of the frame within the jig.

7



Grind the urchin and starfish glass pieces, then check for a good fit with the paper template.

8

Wrap the edges of the urchin and starfish with copper foil.



Burnish the edges with a fid or the blunt side of scissors.

9

Tack-solder the urchin and starfish separately, then set the pieces aside.



Do not bead at this step.

10

Cut the lead segments and place the glass pieces within the lead channels.



Secure the placement of the glass pieces with horseshoe nails. Gently tap the glass into place using a soft mallet, working your way from top to bottom.

11

Once you reach the area beneath the scallop, work from the outside in and tap in the middle piece of float glass.



Continue from top to bottom until you reach the area with the urchin and starfish. Do not lead around those features yet.

12

Wrap the starfish with lead came, then cut the came for the lines above and below the urchin.



Assemble these elements side by side, then push all at once in place.

13

Lead the remaining pieces and close the project with the fourth and last piece of the zinc came.



14

Solder the joints that abut the zinc frame.



Brush a few joints with flux and melt a bit of solder over them. Remember that zinc takes a bit more flux and heat than lead for the molten solder to adhere. Solder all of the remaining came joints. **Be sure to always solder your project in a well-ventilated area.**

15

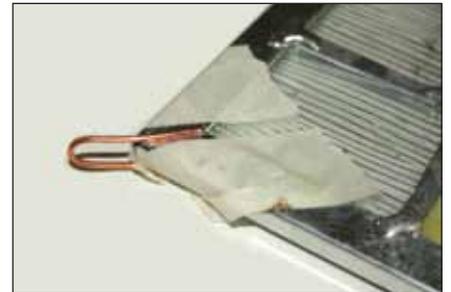
Solder the urchin and star fish.



As you solder, make a nice bead over the copper foil lines, then join those foil lines to the lead came with solder.

16

Create and attach the hooks for the panel.



Make the hanging hooks by folding over the 14-gauge copper wire. Create resist channels with masking or electrical tape and solder the hooks into the two upper corners. Create similar resist channels for the bottom corners, but without the hooks, and solder those as well.

17  
*Squeeze the black putty under the came with a putty knife or with your gloved hands on both sides of the project.*



18  
*Thoroughly clean the zinc and lead lines.*



Throw a fistful of whiting onto the puttied window and brush vigorously with a burnishing brush, along and against the lead lines, with a circular motion. Brush the whiting until the zinc shines and the lead turns dark gray. Repeat on the other side of the window.

19  
*Remove any excess putty with a fid.*



Now clean your project with abundant soap and water. In a month's time, your putty will have cured and become firm.

**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.*



*In her free time, Chantal draws patterns in a variety of styles ranging from Victorian to geometric and self-publishes them on the Internet. Lately, she's concentrating her efforts on glass painting.*

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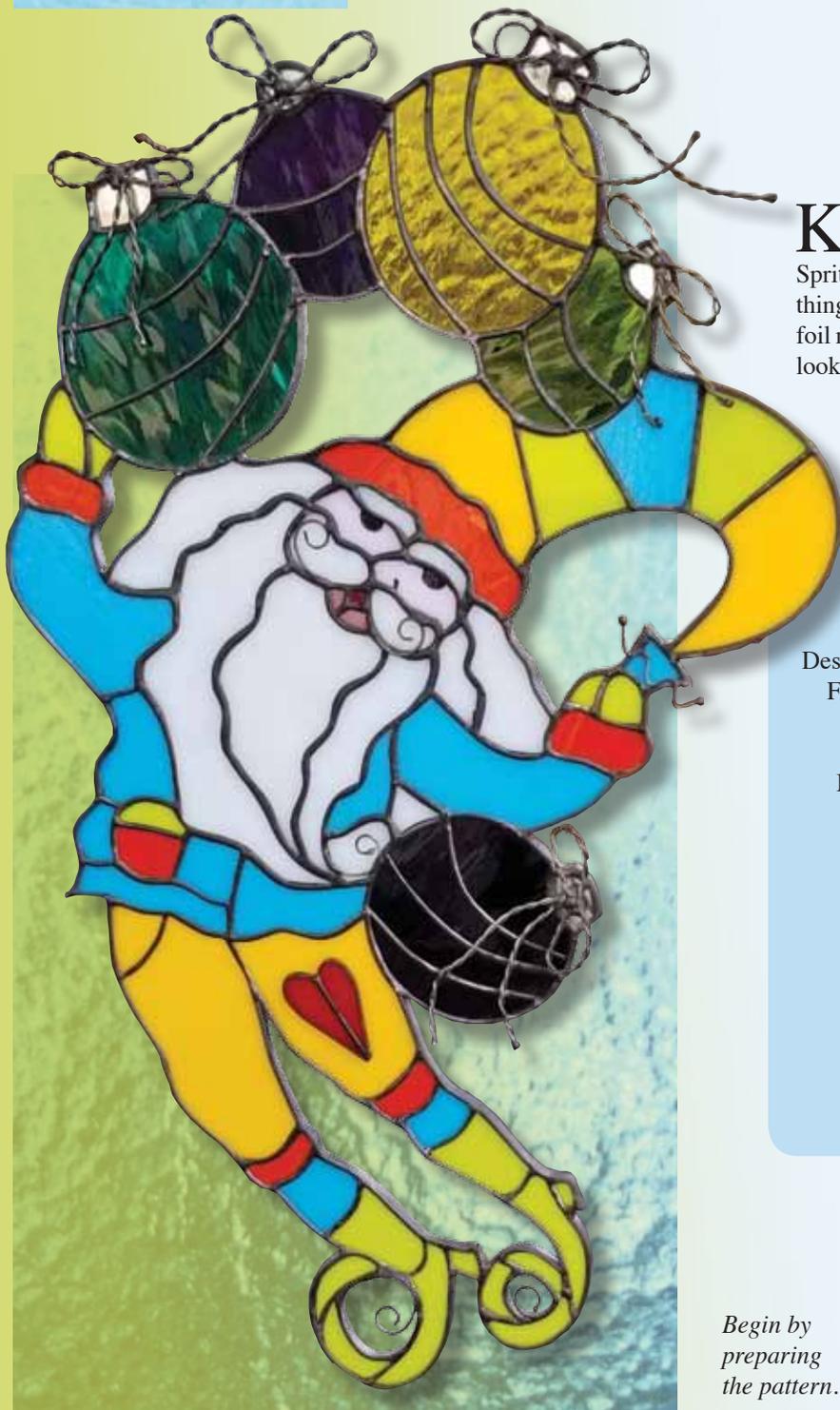
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# Holiday Sprite

*Design and Text by Dionē Roberts, Fabrication by Dionē Roberts and Akalia Woods*



**K**eepon your toes! The holidays are just around the corner, and this little 12-3/4" x 20" free-form Sprite panel is ready to help you juggle all of the things on your busy schedule. Made with the copper foil method and a leaded edge, this elfish little fellow looks great in bright, whimsical colors.

## Glass

Bright Blue for Coat, 6" x 6"  
Sunflower Yellow for Pants, 6" x 6"  
Desired Colors for Hat, Mittens, and Shoes, Scrap  
Four Different Colors for Ornaments, 6" x 6"  
White for Beard and Mustache, 6" x 12"

## Additional Glass

Mirror Scrap for Ornament Caps (optional)

## Tools and Materials

Spray Glue Tag Board  
3/16" and 7/32" Copper Foil  
Mirror Edge Sealant or Clear Nail Polish  
Homasote Board Pushpins  
60/40 Solder Soldering Supplies  
16-Gauge Copper Wire  
Black Enamel Paint E6000 Glue  
Fine-Tipped Paint Brush  
Patina Lead Nippers  
5/64" U-Channel Hobby Lead

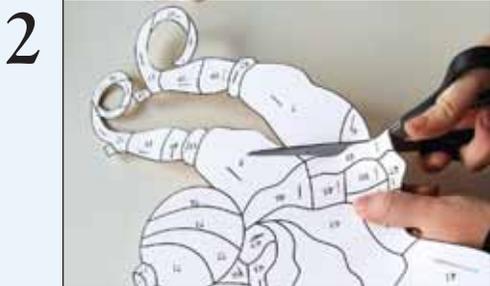
1

*Begin by preparing the pattern.*



To make the pattern pieces to trace onto the glass, start by using the spray glue to attach the Sprite pattern to the tag board. Let the glue dry, then mark the glass grain direction on the pattern.

Cut the pattern pieces apart with pattern shears.



Cut, grind, and foil the glass pieces.



Trace the pattern pieces onto the glass you have chosen for the Sprite, then cut and grind the individual pieces. Foil each piece, using the 3/16" foil on the very small pieces. If you are using mirror on the caps of the ornaments, seal the edges and the backs with clear nail polish or mirror edge sealant. Apply copper foil to the two pieces of the heart shape and set aside.

Assemble the design, then flux and solder the glass pieces.



Assemble the glass pieces on a piece of Homasote board using pushpins to hold everything in place. Flux the copper foil, then solder the front and the back of the project using 60/40 solder. Keep the solder about 1/4" away from all of the edges. Solder the two heart pieces together, putting a solder bead on the front but leaving the back seam tinned.

Trim the outer edges and the open spaces with the 5/64" U-channel hobby lead.



Cut the lead with the lead nippers to fit into the corners. If copper foil sticks out from under the lead, solder the foil to the lead.



Create the wire trim pieces.

Twist together two 36" lengths of the 16-gauge wire for the bows. Following the pattern, form the twisted lengths of wire into the shape of three bows. Solder the bows to the tops of the ornaments.

Using 16-gauge wire, solder curls on the moustache and shoe tips and the zigzag on the hat, adding decorative soldering as desired. Add hanging hooks on the back of the Sprite as shown on the pattern with wire running down through the back of the Sprite for extra support as indicated by the dotted lines.

Clean the project before applying the patina. Also patina the heart piece and glue it in place on the pants with E6000 or a glue of your choice.

Add the facial details with black enamel paint.



Use black enamel paint and a fine-tipped paint brush to paint eyes and a small line to designate the nose on the Sprite. Now he is finished just in time to help you celebrate a wonderful holiday season.

**GPO**

*Dionē Roberts caught the glass bug early in life. She worked with glass making mosaics, original stained glass panel designs, and fused glass in her spare time. In 1994 the artist made glass her full-time work when she opened D&J's Glassworks in Billings, Montana.*

*During her glass career, Dionē has had 12 pattern books of glass designs published and continues to design for glass stores around the country. Currently, her passion is painting on glass with kiln fired enamels. She sells her work in local galleries.*



# Candy Cane Wreath

Design by Terra Parma, Text by Darlene Welch

Candy canes, sprigs of holly, glowing candles, and beautiful bows have served over the centuries as time-honored symbols of Christmas. The careful selection of dense and Wispy green opal glass colors used for the holly and bows plus the alternating bands of vivid red and opal/crystal and the glow of the candle flame bring this traditional design to life and capture the warmth that Christmas brings.

This 10-3/4" x 14" free-form stained glass panel designed by Terra Parma is from her pattern collection, *Christmas Traditions in Glass* published by Stained Glass Images. The 52-page book includes patterns for hanging decorations, stand-up scenes, and dimensional pieces and features the "Twelve Days of Christmas" series plus other Christmas-themed suncatchers.

**GPO**



## Wissmach Glass Company

*All Glass from Scrap*

25-D Orange/Green/Dense Opal/Crystal for Flame

325-D Light Amber/Dense Opal/Crystal for Flame Glow

145-D Dark Amber/Dense Opal/Crystal for Candle

WO-112 Dark Green/Dark Amber/Opal Wispy for Holly Leaves

208 Orange Cast Opal in Smooth or Aqua-Lite for Holly Berries

WO-152 Yellow Green/Dark Green/Opal/Crystal Wispy for Ribbon

WO-28 Orange/Opal Wispy for Wreath

51DDXXMSP Dense Opal/Crystal for Wreath

### Tools and Materials

7/32" Copper Foil Flux Solder

Black Patina 1/4" U-Channel Lead

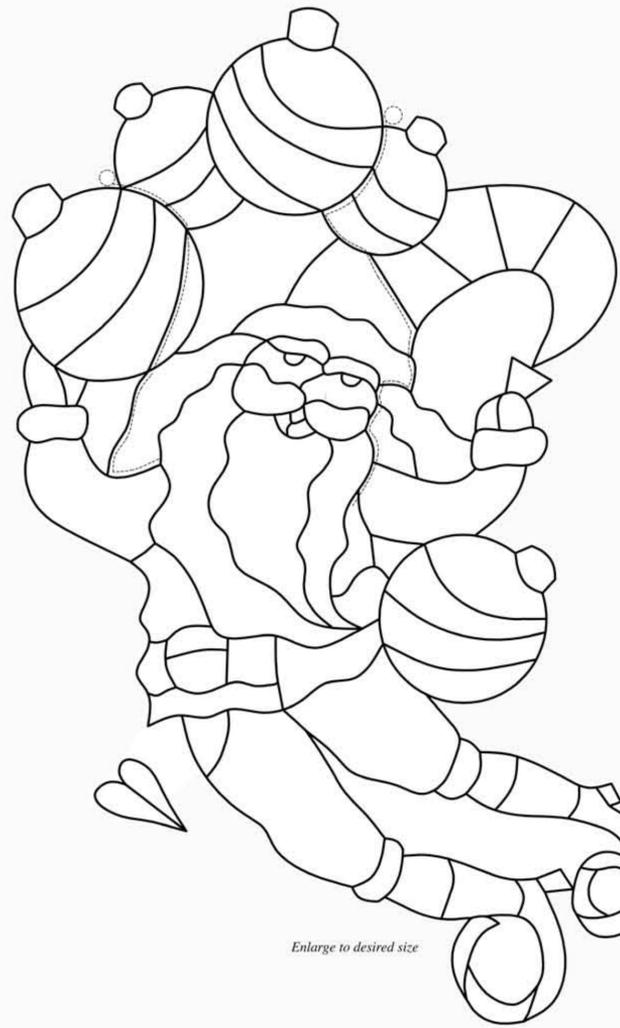
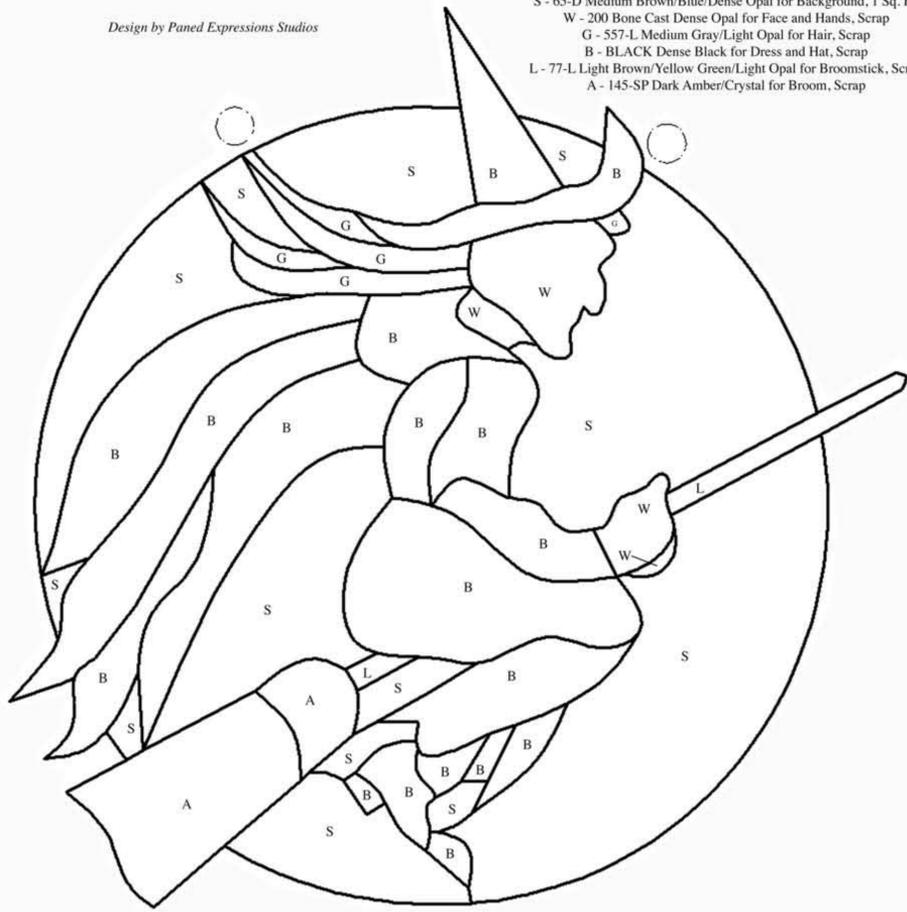
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# ETA Halloween

Design by Paned Expressions Studios

Wissmach Glass Co.

S - 65-D Medium Brown/Blue/Dense Opal for Background, 1 Sq. Ft.  
 W - 200 Bone Cast Dense Opal for Face and Hands, Scrap  
 G - 557-L Medium Gray/Light Opal for Hair, Scrap  
 B - BLACK Dense Black for Dress and Hat, Scrap  
 L - 77-L Light Brown/Yellow Green/Light Opal for Broomstick, Scrap  
 A - 145-SP Dark Amber/Crystal for Broom, Scrap



Enlarge to desired size

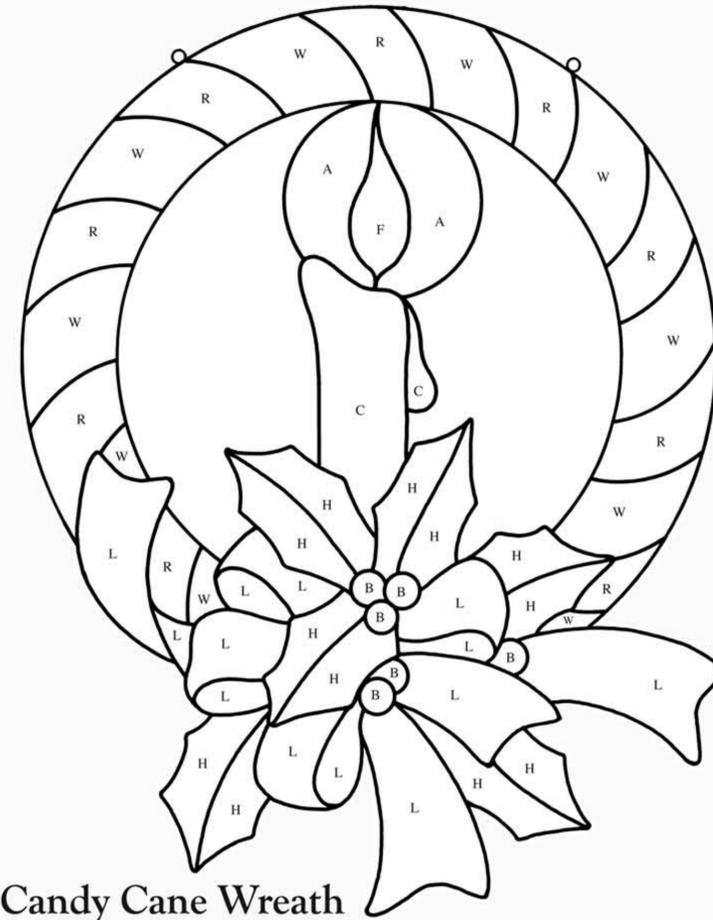
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Wissmach Glass Company

All Glass from Scrap

F - 25-D Orange/Green/Dense Opal/Crystal for Flame  
 A - 325-D Light Amber/Dense Opal/Crystal for Flame Glow  
 C - 145-D Dark Amber/Dense Opal/Crystal for Candle  
 H - WO-112 Dark Green/Dark Amber/Opal Wispy for Holly Leaves  
 B - 208 Orange Cast Opal in Smooth or Aqua-Lite for Holly Berries  
 L - WO-152 Yellow Green/Dark Greek/Opal/Crystal Wispy for Ribbon  
 R - WO-28 Orange/Opal Wispy for Wreath  
 W - 51DDXXMSP Dense Opal/Crystal for Wreath

# Glass Patterns Quarterly® Pullout Pattern Sheet Fall 2020



## Candy Cane Wreath

Design by Terra Parma

## Holiday Sprite

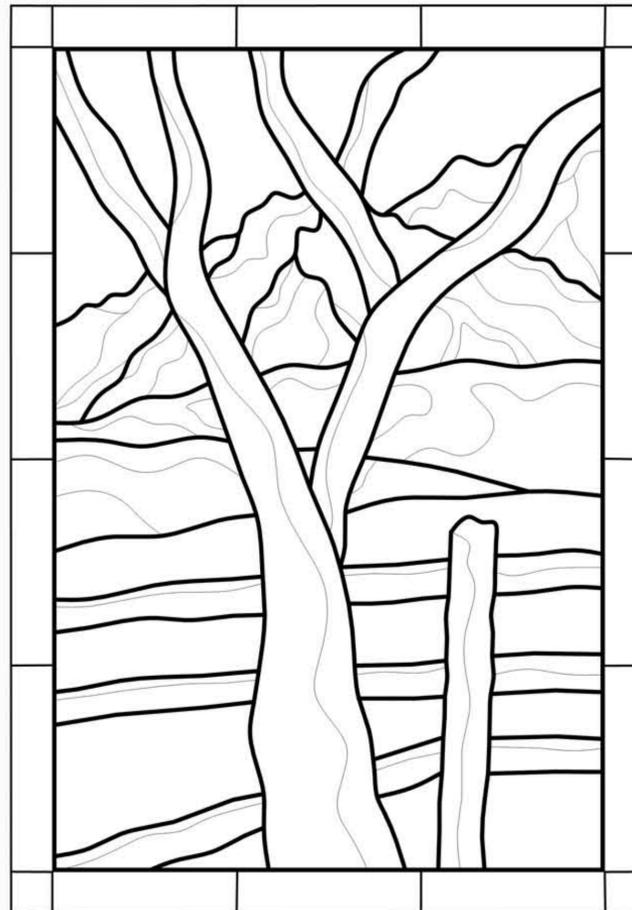
Design by Dioné Roberts

**Glass**  
 Bright Blue for Coat, 6" x 6"  
 Sunflower Yellow for Pants, 6" x 6"  
 Desired Colors for Hat, Mittens, and Shoes, Scrap  
 Four Different Colors for Ornaments, 6" x 6"  
 White for Beard and Mustache, 6" x 12"  
**Additional Glass**  
 Mirror Scrap for Ornament Caps (optional)

## Winter Is Coming

Design by Robin Anderson

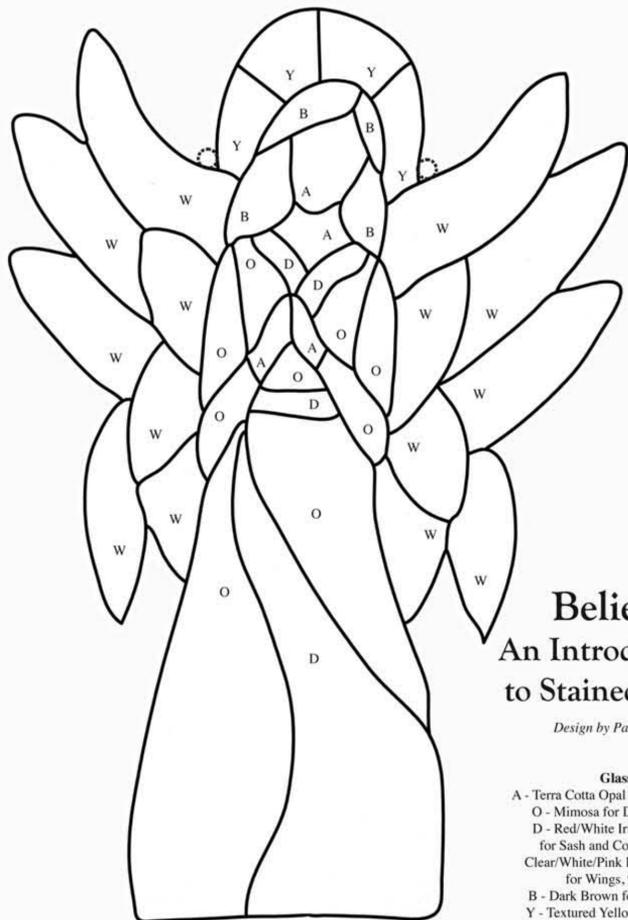
**Compatible Fusible Glass**  
 Clear Thin for Border, 10" x 14"  
 Brown Opal for Border, 8" x 12"  
 Dark Brown Opal for Fence, 6" x 12"  
 Green Opal for Grassy Area, 10" x 5"  
 Medium Gray Opal  
 for Base Glass and Mountains, 10" x 8"  
 Light Blue Transparent for Sky, 10" x 10"  
 Orange/Yellow/Clear  
 for Sunset (optional), 10" x 10"  
**Compatible Glass Opal Frits**  
 White Yellow  
 Sunflower Yellow  
 Marigold Orange  
 Persimmon Lemongrass  
 Olive Green Dark Green  
 Pewter Gray Charcoal Gray  
 Dark Chocolate Chestnut



## Believe An Introduction to Stained Glass

Design by Pat Chase

**Glass**  
 A - Terra Cotta Opal for Skin, 2" x 3"  
 O - Mimosa for Dress, 9" x 6"  
 D - Red/White Iridized Wispy  
 for Sash and Collar, 8" x 4"  
 Clear/White/Pink Iridized Wispy  
 for Wings, 9" x 9"  
 B - Dark Brown for Hair, Scrap  
 Y - Textured Yellow Translucent  
 for Halo, Scrap

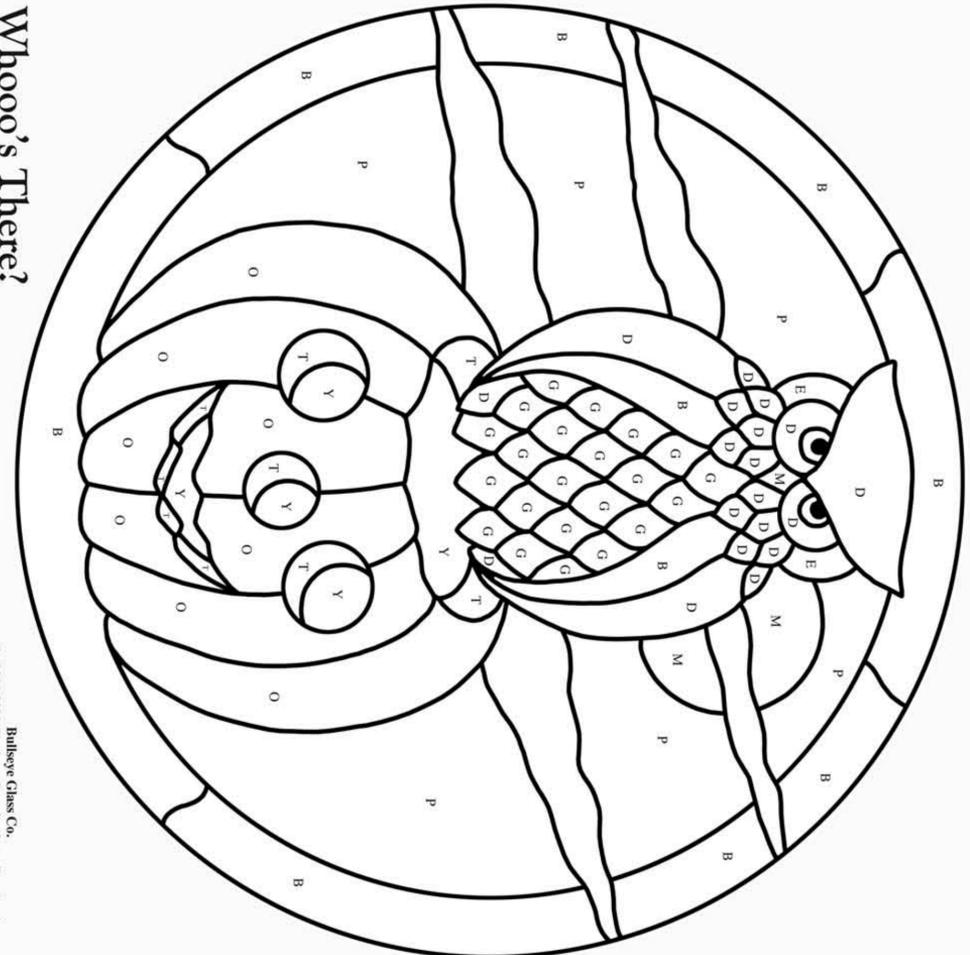


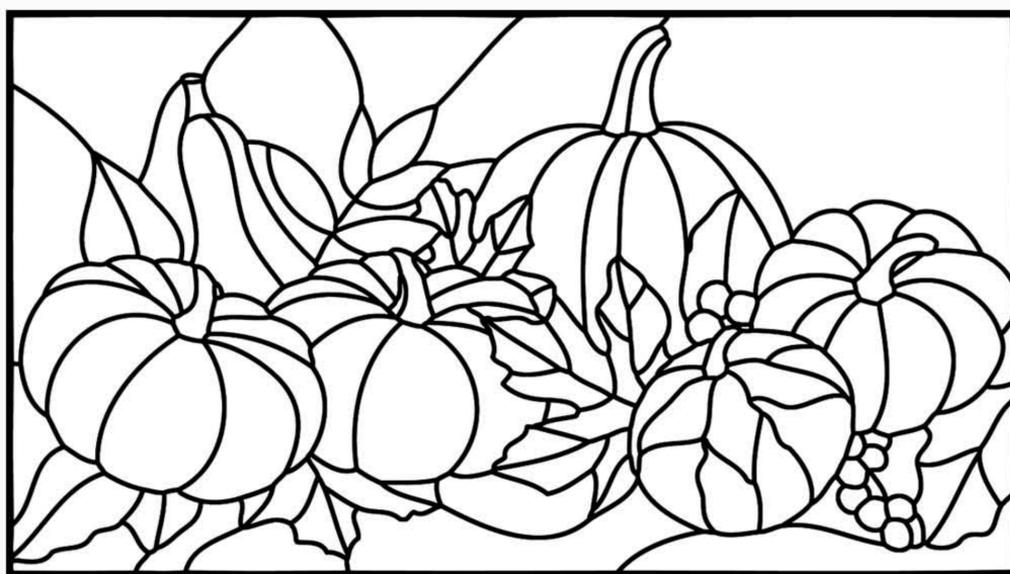
## Who's There?

Design by Leslie Gibbs

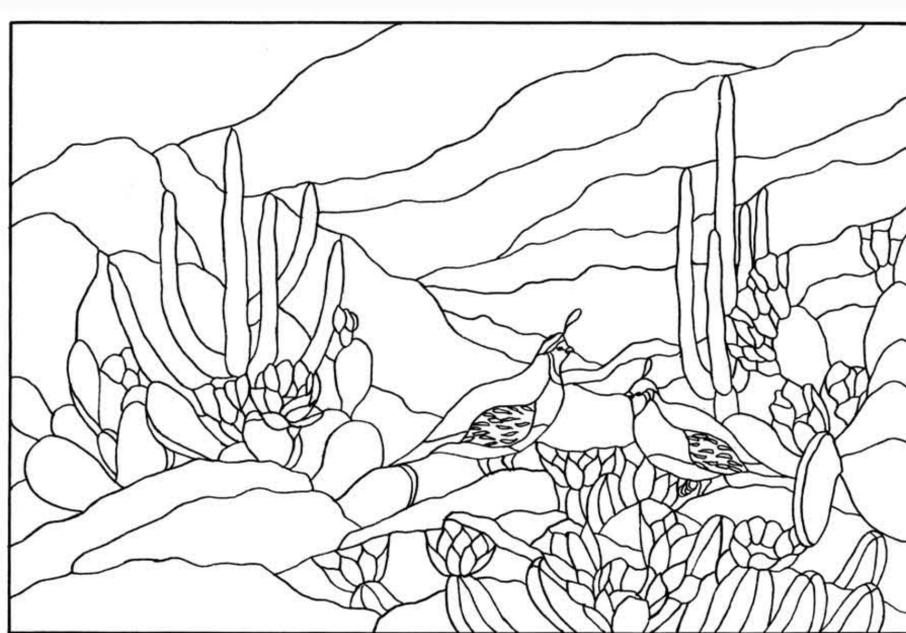


**Balsley Glass Co.**  
 E - 0206 0030 Elephant Gray for Outer Eye Band  
 and Inner Long Feathers, 4" x 4"  
 M - 001025-0031 Light Orange Iridescent  
 for Moon and Beak, 2" x 2"  
 T - 001125-0051 Orange Iridescent Thin for Inside Shading  
 for Eyes, Nose, and Mouth, 4" x 4"  
 Y - 000320-0050 Marigold Yellow Thin  
 for Jack-O'-Lantern Inner Glow, 4" x 4"  
 B - 000118-0030 Periwinkle for Panel Border, 8" x 6"  
 C - 0001000-0051 Thin Black Iridescent for Talons, Scrap  
**Additional Glass**  
 D - Dark Gray Iridescent Cathedral for Top of Head,  
 Under-Eye Circles, and Outer Feathers, 3" x 6"  
 P - Purple Iridescent Striky for Background Sky, 8" x 8"  
 G - Gray Striky Iridescent for Chest Feathers, 4" x 4"  
 O - Orange for Jack-O'-Lantern Body, 5" x 9"





Enlarge to desired size



Enlarge to desired size

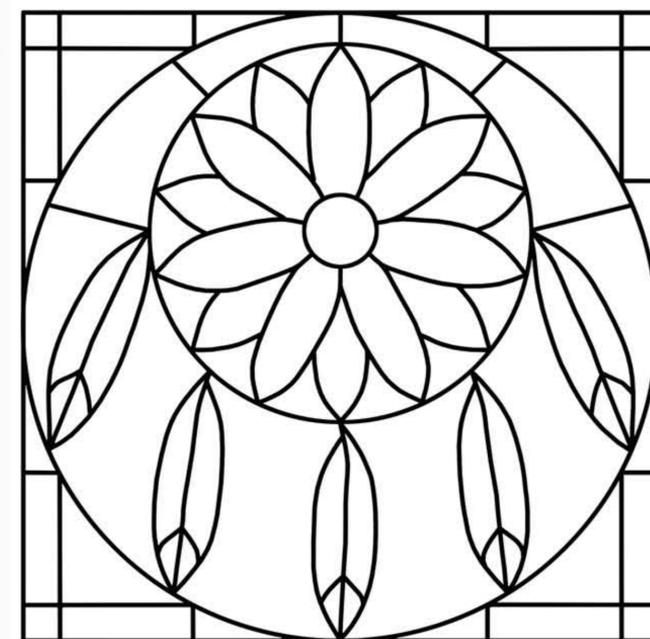
## Rainbow Mandala Dream Catcher

Design by David Kennedy

**Wissmach Glass Co.**  
**Dream Catcher**  
 51-DDXXM Iridized Opal/Crystal for Background, 1 Sq. Ft.  
 WO-051 Irid White Opal Wispy for Feathers, Scrap

**Mandala**  
 Dew Drop-01 Textured Iridized for Mandala Background, 1/4 Sq. Ft.  
**Mandala Petals and Center Jewel from Scrap**  
 241 Dark Purple Mystic Cathedral  
 158 Medium Copper Blue Mystic Cathedral  
 18-L Orange Cathedral  
 EM348 Midnight Blue English Muffle  
 EM343 Green English Muffle  
 EM310 Dark Amber English Muffle  
 EM180 Red English Muffle  
 51-DDXXM Iridized Opal/Crystal for Mandala Center Jewel

**Additional Glass**  
 Sky Blue/Steel Waterglass for Dream Catcher Feathers, 1/4 Sq. Ft.



Enlarge to desired size

## Pumpkins and Gourds

Design by Mary Harris

**Wissmach Glass Company**  
 WO-17 White Opal/Red/Orange Wispy for Large Pumpkin, 1/2 Sq. Ft.  
 317-D Dark Amber/Dense Opal for Small Pumpkins, 1 Sq. Ft.  
 78-L Medium Amber/Green/Light Opal/Crystal for Large Gourd, 1/2 Sq. Ft.  
 145-SP Dark Amber/Crystal for Small Gourd, Scrap  
 315-D Medium Amber/Dense Opal for Tall Gourd, Scrap  
 155-LL Dark Purple/Green/Light Opal/Crystal Streaky for Pumpkin and Gourd Stems, Scrap  
 223-LL Light Amber/Dark Brown Streaky for Leaves, 1-1/2 Sq. Ft.  
 23-L Light Green Light Opal/Copper Red for Leaves, Scrap  
 100-SP Dark Green/Light Opal for Leaves, Scrap  
 WO-29 Dark Red/Opal/Crystal Wispy for Berries, Scrap  
 65-L Medium Brown/Blue/Light Opal for Background, 2 Sq. Ft.

## Quail in Flowering Desert

Design by Jennifer Cole

**Wissmach Glass Co.**  
 WO-17 Wispy White Opal/Red/Orange for Sky, 3/4 Sq. Ft.  
 WO-319 Dark Yellow Green Wispy for Cactus, 1/2 Sq. Ft.

**Bullseye Glass Co.**  
 0145 Jade Green Opal for Cactus, Scrap  
 2123 White/Orange Opal/Deep Forest Green Mix for Sky, 1/2 Sq. Ft.

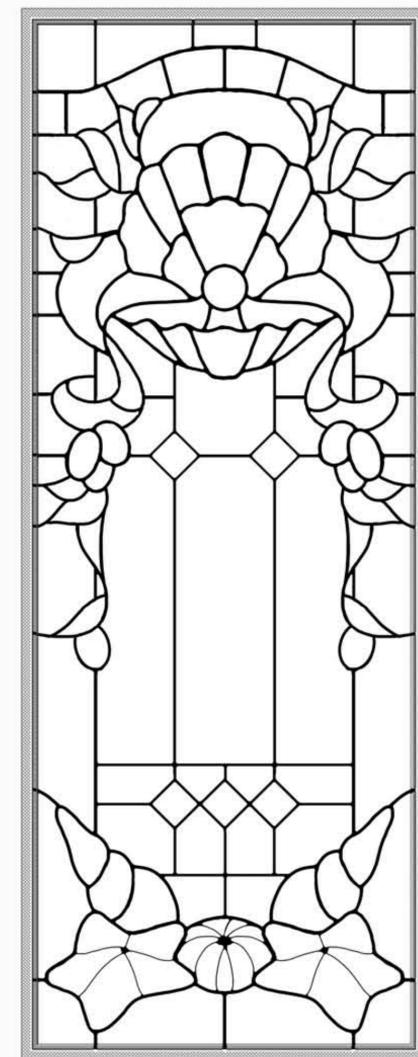
**Additional Glass**  
 Blue/Brown Ripple for Sky, 1/4 Sq. Ft.  
 Dark Green/Opal Tight Ripple for Saguaro Cactus, Scrap  
 Inferno Orange/Yellow/Clear for Sky, 1/2 Sq. Ft.  
 Alpine Blue Opal for Quail, Scrap  
 Yellow/White for Sky, Scrap  
 Pastel Pink/White Ring Mottle for Sky, 1/2 Sq. Ft.  
 Light Brown/White Ring Mottle for Ground Cover, 1/2 Sq. Ft.  
 Clear Cathedral Radium for Quail Wings, Scrap  
 White for Quail, Scrap  
 Gray for Quail, Scrap  
 Red/Purple for Flowers, Scrap  
 Brown for Ground Cover, Scrap

## Scallop and Pearl

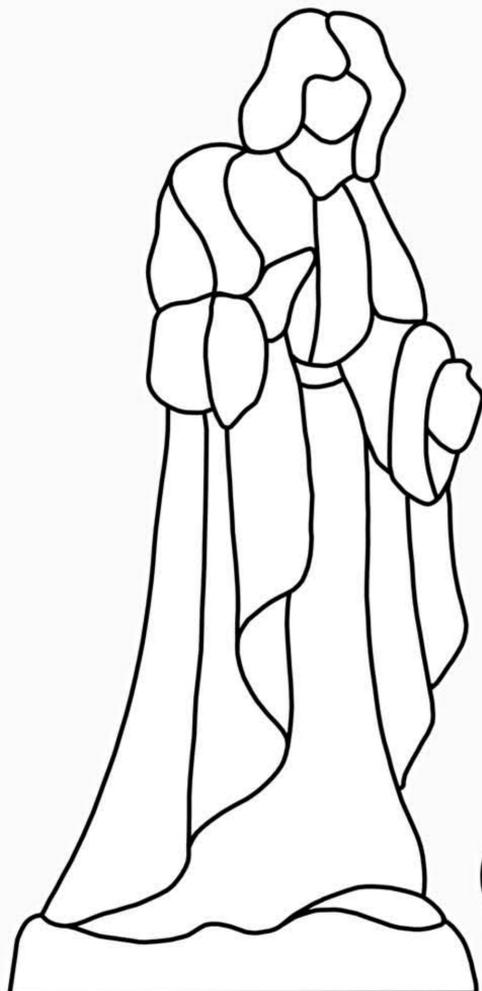
Design by Chantal Paré

**Wissmach Glass Company**  
 Iridescent Muranese Clear for Pearl, Scrap

**Additional Glass**  
 3 mm Clear Float Glass for Window Center, 3 Sq. Ft.  
 Orange for Shells, 1/2 Sq. Ft.  
 Pink for Shells, 1 Sq. Ft.  
 Green/Rose/Pink Stipple for Seaweed and Starfish, 1/2 Sq. Ft.  
 Yellow Stipple for Shells, 1 Sq. Ft.  
 Blue/Green Stipple for Blue-Green Seaweed, Scrap  
 Clear Rainwater Textured for Outer Border, 2 Sq. Ft.  
 Clear Baroque for Lower Center, 1 Sq. Ft.  
 Clear Cord for Outer Border, 1 Sq. Ft.  
 1" Square Bevels for Window Center, 4



Enlarge to desired size



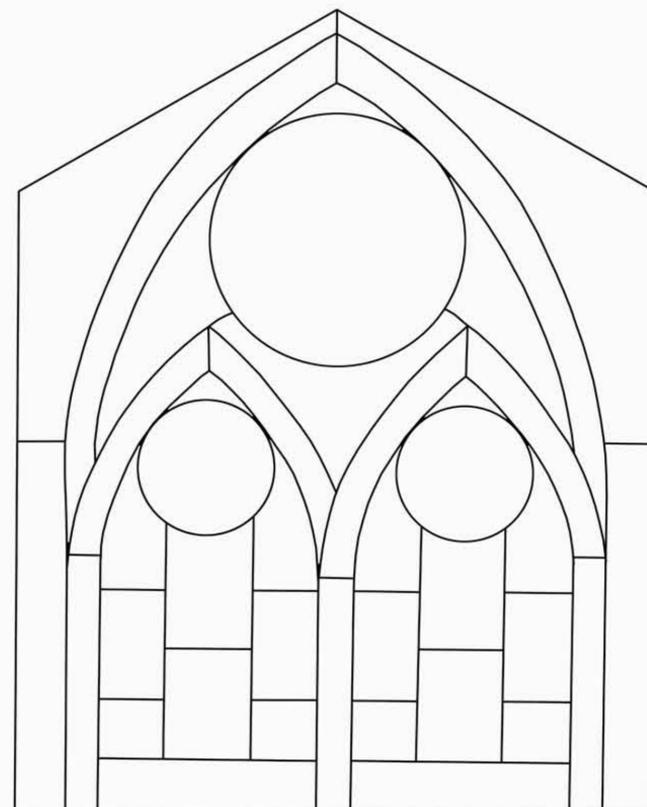
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## The Holy Family Nativity Remembering the First Christmas

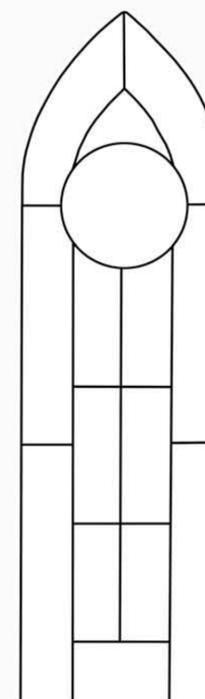
Design by Angela and Werner Mirring

**Glass**  
 Clear/White Wispy for Christ Child, Scrap  
 White/Clear for Mary, Joseph, and Christ Child, Scrap  
 White/Light Amber for Base and Holy Family, Scrap  
 Light Amber/White Semitranslucent for Background Panel, 12" x 24"  
 White Opal for Background Panel, 12" x 24"  
 Brown/Gold Streaky Granite Semitranslucent for Joseph and Bottom of Background, Scrap  
 Pink Champagne Opal for Faces, Scrap  
 Dark Blue/White Semitranslucent for Mary, 6" x 8"  
 White/Sky Blue for Mary, Scrap  
 White/Light Gray for Joseph and the Christ Child, Scrap  
 Gray/White Semitranslucent for Joseph, Scrap  
 Pale Blue/White Semitranslucent for Mary, Scrap  
 Orange/White Wispy for Joseph, 4" x 10"  
 Red/White Semitranslucent for Joseph, 6" x 12"  
 Clear Granite for Background and Side Panels, 10" x 28"

**Additional Glass**  
 Saucer for Upper Rose Window  
 Glass Rondels for Side Arch Windows  
 1.75" x 3" Bevels for Star (6)



Enlarge to desired size



# ETA Halloween

Design by Paned Expressions Studios

Text by Darlene Welch



The estimated time of arrival for this high-flying witch is Halloween, her favorite night of the year. This 9" x 10" stained glass design is part of the *Catch the Light* CD pattern collection from Paned Expressions Studios. The CD includes over 90 smaller festive stained glass patterns with 12 corner sets, 12 fan lamps, over 20 small panels, and over 40 sun-catchers for various holidays and every day. The panel can be constructed altogether the way it is show here, or the moon can be cut as one piece, then foiled, tinned, and attached to the assembled and soldered witch.

All of the patterns in *Catch the Light* are provided in color plus black-and-white versions in JPG, TIF, and GlassEye formats for PC and Mac for easy resizing, reshaping, and recoloring. These are image files only with no software included on the CD. The designs also cover all levels of glass skills, so there is something for everyone. For this and many other stunning pattern collections from Paned Expressions Studios visit [www.panedexpressions.com](http://www.panedexpressions.com).

## Wissmach Glass Co.

65-D Medium Brown/Blue/Dense Opal  
for Background, 1 Sq. Ft.

200 Bone Cast Dense Opal in Smooth or Aqua-Lite  
for Face and Hands, Scrap

557-L Medium Gray/Light Opal for Hair, Scrap  
BLACK Dense Black for Dress and Hat, Scrap  
77-L Light Brown/Yellow Green/Light Opal  
for Broomstick, Scrap

145-SP Dark Amber/Crystal for Broom, Scrap

## Tools and Materials

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

GPO

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# Halloween House Lanterns Aglow with Spooky Delight

*Design, Fabrication, and Text by Warren Norgaard*



This is a simple, quick, and fun project that will delight all who see it and offer a special spooky surprise to your nighttime visitors. You can follow along with this step-by-step tutorial or find a creative twist and make it your own unique work of art. We will be using precut shapes, sheet glass, glass powders, and a couple of other unique treats to create this fun piece.

**Bullseye Glass Co.**  
**90 COE Sheet Glass**  
 0113 White, 3" x 3"  
 1100 Tekta Clear, 8" x 10"  
 3123 White/Orange Opal  
 Deep Forest Green 3+ Color Mix, 8" x 10"

**90 COE Glass Powder**  
 0100 Black Opal Powder, 1 oz.  
 0920 Warm White Opal Powder, 1 oz.  
 1101 Clear Powder, 1 oz.

**Milkweed Arts Studio**  
 Glo-Powder Green  
 Haunted House Precut  
 Ghost Precut  
 Witch Precut  
 3 Pumpkin Precuts  
 MiracleMesh or Other Mold of Choice

**Tools and Materials**  
 Colorobbia Liquid Gold  
 Kemper Small Fluid Writer  
 Sifter Small Paint Brush  
 Enameling or Frit Spoon  
 Glastac

This is a simple, quick, and fun project that will delight all who see it and offer a special spooky surprise to your nighttime visitors. You can follow along with this step-by-step tutorial or find a creative twist and make it your own unique work of art. We will be using precut shapes, sheet glass, glass powders, and a couple of other unique treats to create this fun piece.

*Collect all of the materials and supplies together and prepare the base glass.*



Cut an 8" x 10" piece from the Tekta Clear and Mixed Color sheet. Stack the color on the Tekta Clear and full fuse. Cut a 2" circle from the white glass.

*Add the gold details to the precut pumpkins.*



While the kiln is firing, load the Kemper Fluid Writer with a couple of drops of Colorobbia Liquid Gold and add fun gold details to the pumpkin precut shapes. Be careful not to press down with the tool. A light touch of the tool to the glass will get the gold flowing. Do not worry that the color doesn't look gold when you are applying it. The magic happens in the kiln. Set the pumpkins aside to dry.

*Use the Kemper Fluid Writer to add gold detail to the haunted house precut shape.*



How much detail you include is your own creative decision. In this example, I have used the Liquid Gold to create the roof detail on the Haunted House.

*Once the 8" x 10" piece is out of the kiln, secure the house and pumpkins in place with Glastac.*



*Mix a small amount of Warm White Powder with some Glo-Powder and apply it to the white circle.*



For this project, I used 1 tablespoon of powder and 1/8th teaspoon of Glo-Powder. (A little goes a long way!) Sift a light, even coat of blended powder over the white circle.

*Glue the circle to the background.*



This will become a moon in our stormy night sky. Using a small paint brush, clean off any excess powder that may have fallen from the circle onto the base glass.

7

Add the Warm White Powder to the window and door openings.



Using an enameling spoon or frit spoon, place the Warm White Powder blend inside the window and door openings of the house. Not much is required.

8

Mix the Black Powder with Glo-Powder and place it in the eyes, noses, and mouths of the pumpkins.



For this project, I used 1 teaspoon of black powder and 1/2 teaspoon of Glo-Powder.

9

Decorate and attach the ghost precut shapes.



Mix a small amount of Clear Powder with a pinch of Glo-Powder. Set the ghost precut shape with the back side facing up on a flat surface. Which side is the top and which is the bottom will be up to you. Next, brush a thin layer of Glastac to the back side of the ghost, sift on a *very* thin layer of Glo-Powder, and let dry.

10

Place the witch precut shape in your desired location and flying direction.



I have placed her flying across the light of the moon.

11

Finally, place the ghost precut shape on your project with the powder side facing down.



12

Contour-fire the entire project.



13

Slump the piece, if desired.



You can choose to keep the finished piece flat, but here I have chosen to slump it so it can stand upright. A piece of MiracleMesh can be easily shaped by hand to the desired shape.

Fresh out of the kiln, you've now created a Halloween spooky delight, fun by day and spooky by night. Happy fusing! **GPQ**



### Firing Schedules

Here are suggested firing schedules for the Halloween House. Just remember that all kilns fire differently, so you may need to make some adjustments for your own kiln.

#### Full Fuse Firing Schedule

Segment 1: Ramp 400°F/hr to 1250°F and hold 30 min.  
 Segment 2: Ramp 600°F/hr to 1480°F and hold 10 min.  
 Segment 3: Ramp 9999 (AFAP\*) to 900°F and hold 60 min.  
 Segment 4: Ramp 150°F/hr to 700°F and no hold.  
 \*as fast as possible

#### Contour Firing Schedule

Segment 1: 400°F/hr to 1250°F and hold 30 min.  
 Segment 2: 600°F/hr to 1400°F and hold 10 min.  
 Segment 3: Ramp 9999 (AFAP\*) to 900°F and hold 120 min.  
 Segment 4: Ramp 150°F/hr to 700°F and no hold.  
 \*as fast as possible

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Warren Norgaard has been working with glass in one form or another for nearly 30 years. He is owner of Milkweed Arts Studio in Phoenix, Arizona, where he teaches a large variety of workshops. He also teaches specialty workshops across the United States and Canada.

In 2010, Warren founded the Facebook group Fused Glass Fanatics, which has grown to become the largest group of its kind on the Internet. In 2016, he founded the FGF David Alcala Memorial Scholarship Fund, which raises funds and provides scholarships to adults to help further their glass craft knowledge and experience. To learn more about Milkweed Arts, visit [milkweedartsaz.com](http://milkweedartsaz.com). To learn more about Fused Glass Fanatics, visit [facebook.com/groups/fusedglassfanatics](https://facebook.com/groups/fusedglassfanatics). To learn more about the FGF David Alcala Memorial Scholarship Fund, visit [fgfscholarship.org](http://fgfscholarship.org).



## New Bullseye Glass Styles

# LAVENDER 000304

# PEACOCK

# BLUE 001176



# Fused Menorah

*Design and Demonstration by Alysa Phiel, Text and Photography by Jane McClarren*



The menorah, the emblem of the coat of arms of the modern state of Israel, has been a symbol of the Jewish people since ancient times. In December, the menorah plays a central part in each home during the eight-day Jewish “Festival of Lights” known as Hanukkah, which commemorates the rededication of the Second Temple in Jerusalem. The menorah is lit each evening, beginning with only one candle, then adding another one each evening until all are glowing. Create a glass menorah as a lasting reminder of this special holiday that you or a special friend can enjoy all year long.

## **96 COE Glass**

Clear, Iridized, Dichroic, or Textured Glass, 12" x 12"  
Light Amber, Dark Amber, and Iridized Bronze Translucent, 12" x 6"  
Smaller Lengths of Iridized Brown and Amber, Minimum 1-1/2" wide  
2 Pieces of Glass for the Menorah Base in Desired Colors, 3" x 8"

## **Tools and Materials**

Glass Cutter   Mosaic Nippers   Running Pliers  
Clear Gel Glue   Morton Cutting System  
Kiln Paper or Prepared Kiln Shelf   2-Part Epoxy  
Stir Stick   UV Glue such as Loctite   9 Candle Boots  
Permanent Marker   Kiln Paper   Protective Eyewear  
Ruler   Small Cup or Scrap Paper   Kiln Furniture  
Glass Saw   Lap Wheel, Hand Pads, or Emory Board

## Building the Menorah

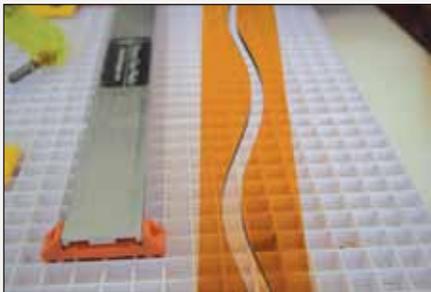
Prepare the base for the menorah by using the permanent marker to trace half of an 11" circle onto the kiln paper, leaving some space on the kiln paper along the top and bottom. Using the ruler, draw a straight line for the bottom edge of the half circle.

Cut the clear glass in half and set up the Morton System for cutting 1-1/2" strips. Using the glass cutter and the Morton System, cut long strips from the glass. You will need 4 strips of clear and 4 to 5 strips of each of the 3 colors.

You can cut a strip or two of other colors at this point, or wait until you start building your piece to determine if and where you want to place additional colors.

1

Use the glass cutter to make wavy cuts down the middle of each strip.



You should make the wave patterns different on each strip. Using the running pliers, slowly break each cut. You may need to work from both ends of the glass strip in order to follow the cut lines.

2

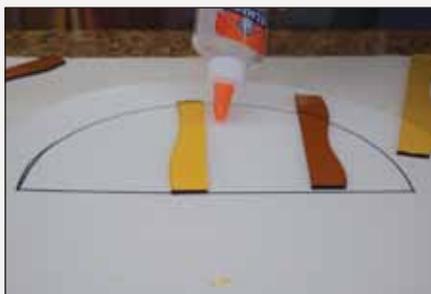
Lay out the strips on your work surface so you can constantly see your selections.



You will be inserting a clear strip between colored strips. If you are using iridized glass, make sure you do not glue 2 iridized sides together, since they will not fuse.

3

Begin to build the menorah.

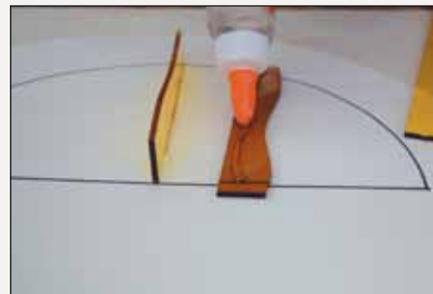


Determine which piece of glass you want to use to start building the menorah. Run a line of clear gel glue vertically down the center of the half circle. Lay the glass, edge side down, onto the glue line on kiln paper. Use the straight line at the base of the half circle to align the straight edge of the glass strip.

Use the mosaic nippers to trim each glass strip to the correct size as you continue to build. The top of each strip should not be more than 1/4" over the outline.

4

Add more strips.



Select the next strip of glass you would like to use and run a line of clear gel glue onto the side that will connect it to the center piece. You will be gluing all of the strips to each other from this point on. Continue to add strips to your design.

5

Continue building all the way to the edges.



You can use a piece of glass to slide the strips into place if they need to be realigned.

6

Finish building the piece.



Apply a drop of gel glue to all 4 corners of one piece of the base glass. Top it off with the second piece of base glass. Add to your kiln paper. Once you have everything built, transfer it to the kiln.

7

Use the kiln furniture to dam the flat edge of the menorah and fire.



Prime and line the kiln furniture with kiln paper for a smooth finish. Fire on a dimensional thick-fuse schedule, making adjustments as needed to work with your own kiln.

### Dimensional Firing Schedule

- Segment 1: Ramp 100°F/hr to 300°F and hold 15 min.
  - Segment 2: Ramp 150°F/hr to 1050°F and hold 10 min.
  - Segment 3: Ramp 250°F/hr to 1420°F and hold 1 min.
  - Segment 4: Ramp 9999 (AFAP\*) to 950°F and hold 90 min.
  - Segment 5: Ramp 100°F/hr to 800°F and hold 10 min.
  - Segment 6: Ramp 300°F/hr to 100°F and no hold.
- \*as fast as possible

### Cold Working the Menorah

8  
*Using the glass saw, cut a straight line off the long, straight edge of the fused glass.*



Cut off as little as possible. This will become the top of the menorah.

Align the cut edge along the track on the glass saw so that you are sure the new cut will be at the same angle. Adjust to cut a straight line along the curved edge of the glass. Cut off only enough to capture a flat surface for attaching the base.



*Sand the cut edges to improve the finish.*

9



Your cut edges will have a white opaque finish to them. You will need to use the lap wheel, hand pads, or emery board to obtain a translucent shiny finish. We used a 220-grit and a 400-grit wheel to get the desired finish.



10

*Create the Shamash candle block.*



Take one of the smaller cut-off scraps and cut it on the saw on the other 3 sides to create a small block about 1/2" x 1/2". Make sure it is wide enough for the candle boot. This will be the base for the center Shamash candle. Use the UV glue to attach the block to the center of the top edge of the menorah.

11

*Attach the menorah to the fused glass base.*



Run a line of UV glue down the center of the bottom of the menorah on the shorter flat edge. In sunlight, attach the menorah to the fused glass base. It may help to figure out its placement prior to adding the glue so that it doesn't need to be moved around.

12

*Attach the 9 candle boots.*



Mix the 2-part epoxy in a small cup or on paper with the mixing stick. Attach the candle boots to the back of the menorah. After gluing the candle boot to the center Shamash block, you will be gluing 4 candle boots to each side. You can use a ruler to mark the locations on the back.

To keep them from falling off, it helps to fold some paper and place it under the back of the base to tilt the menorah forward a bit while the glue dries, which happens fairly quickly. Now you're ready to add the candles and enjoy their beautiful commemorative glow during this special holiday season.

**GPO**



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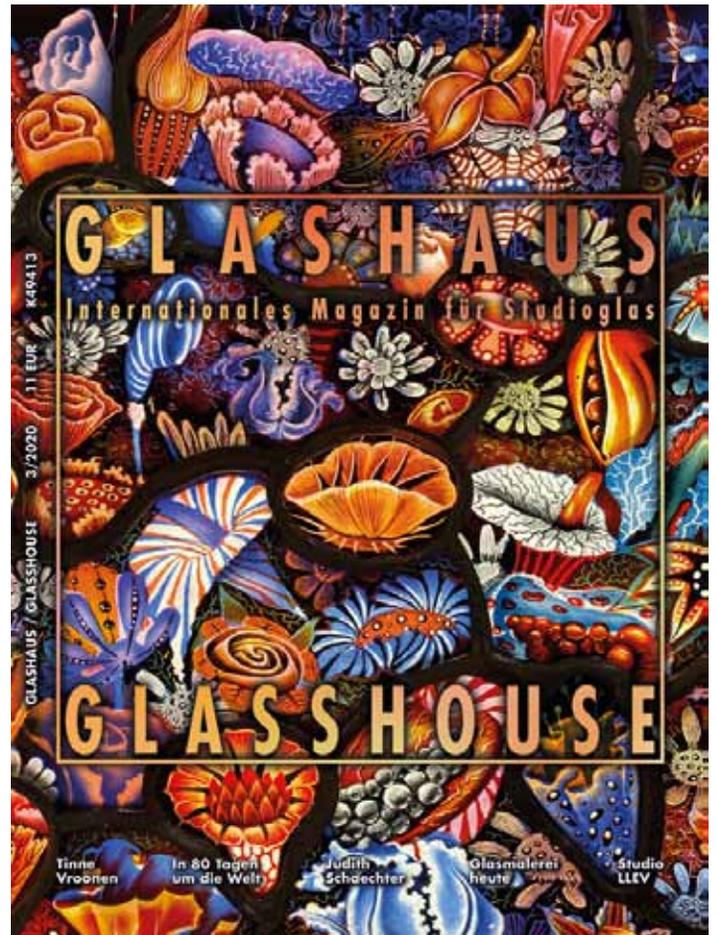


Alysa Phiel, a regular contributor to Glass Patterns Quarterly since 2012, is a third-generation glass artist with 30 years of experience having been taught by her grandparents, longtime glass artists who owned their own studio for 12 years. Alysa then owned and operated

Creations in Glass with her mother for 10 years. She has shared beginning to advanced classes with hundreds of students over the past eight years as the Director of the Warm Shop at Sonoran Glass School in Tucson, Arizona.

Recently Alysa opened her own studio, Wild Desert Glass, where she continues to create custom projects in addition to offering instruction in fused glass, stained glass, and mosaics. The artist's creativity and range of knowledge make her a fantastic teacher for students looking to create any type of glass art. She constantly experiments with new techniques and materials and helps others challenge themselves and expand their own skills as artists.

Alysa's work, which ranges from fused functional pieces and wall art to mosaic furniture and fountains, can be found in private collections all over the country. She also has numerous commissioned stained glass windows installed in homes and churches all around Tucson.



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# Getting Control of Your Slump

by Bob Leatherbarrow

One of the most common concerns of kiln forming glass artists is what makes a good slumping schedule. Unfortunately, in my opinion there is not a “one schedule fits all” program. The rate that glass slumps into a mold depends on many factors such as temperature, time, span, thickness, and viscosity, the impact of which will be discussed below for each element. With an understanding of the impact of these parameters on the rate of slumping, it is possible to develop a strategy for programming the kiln. This strategy, combined with making visual observations, will improve the quality of your slumped pieces.

## Temperature

The hotter the glass, the more pliable it is and the faster it slumps. The main downside of slumping at high temperatures is that the slump happens quickly, and you lose control of the shape of the piece. The stretching of the glass, particularly in deep and drop out molds, is confined to a relatively narrow part of the bowl. Marks from the mold surface can also be embossed onto the hot glass. The lesson here is that slumping at lower temperatures takes more time but results in even stretching across the glass and relatively few mold marks.

## Time

The longer the glass is held at any temperature within the slumping zone, the more it slumps, so with patience you can slump at lower temperatures. You can decide when the glass has properly filled the mold.

With a lower slumping temperature you can also recenter the glass on the mold at the very onset of slumping if the glass has started slipping off of the mold. The lesson here is that slow slumping rates allow more control over the shape of the piece.

## Span

Span is the width of unsupported glass across the mold. The wider the mold, the lower the temperature at which the glass slumps. The range of slumping temperatures varies significantly with span. For example, with a collection of ball molds, all of which are about 3 inches deep, glass on slumping molds with spans of about 21 inches, 16 inches, 11 inches, and 6 inches slumped in my kiln at approximately 1100°F, 1120°F, 1150°F, and 1170°F, respectively. Your kiln might be different.

Figure 1 shows strips of various lengths of glass—12 inches, 14 inches, 15 inches, 17 inches, and 20 inches from top to bottom—that were slumped simultaneously to the same temperature on different spans. The wider the span the greater the degree of slumping. The lesson here is that to slump glass on molds with a narrow span, you have to fire to higher temperatures.



(Figure 1) Strips of varying lengths of white glass were slumped simultaneously. The strips with the greatest span slumped the most.

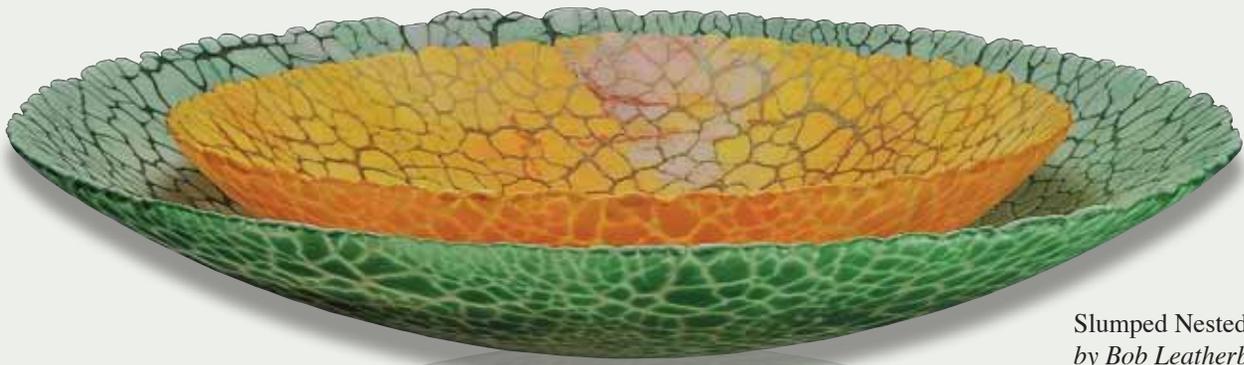
## Thickness

The greater the glass thickness, the slower the rate of slumping for a given span. Figure 2 shows 8-inch-long glass strips with thicknesses of 1/16 inch, 1/8 inch, 1/4 inch, and 3/8 inch. These four strips were slumped simultaneously. The thinner glass has moved much more than the thicker glass.

Since glass is a poor conductor of heat, the thicker the glass, the longer it takes for heat to conduct into the interior of the strip. Therefore, the interior temperature of thicker glass is lower than thinner glass and will not slump as much as the thinner glass. The lesson here is the thicker the glass, the higher the slumping temperature.



(Figure 2) For glass strips of equal span, the thicker the glass, the less the degree of slumping when fired simultaneously to the same temperature.



Slumped Nested Bowls  
by Bob Leatherbarrow

## Viscosity

Viscosity is a measure of the resistance to gradually deform, or slump. Glass with a higher viscosity, such as white, slumps at higher temperatures than glass with a lower viscosity, such as black. Figure 3 shows a collection of various colored Bullseye opal glass rods that were slumped simultaneously to the same temperature. The uppermost white rod is the highest viscosity, or stiffest glass, and has slumped the least. The red glass has slumped marginally more. The yellows are less viscous and have slumped more than the red. Black is the least viscous, or softest, glass and has slumped substantially more than the other rods.

If you were to slump two bowls of equal size and thickness into two similar molds but one bowl was white and the other was black, they would slump at significantly different rates. When the black bowl initially fills the mold, the white bowl would only be partially slumped. If, however, the slump progressed so that the white bowl completely filled the mold, the black bowl would be “overslumped” and may have picked up marks from the glass touching the mold.

The variation in viscosity within a piece is important when slumping into deep molds. If one side of the design is black and the other side is white, the glass will bend initially on the black side of the piece. The result is that the black glass will slip down into the mold first, and the piece will come out off center.

Figure 4 shows a strip of glass 9 inches long that has black along one third of the upper edge. The initial deformation of the softer black glass resulted in a lopsided shape to the strip. When planning deep slumps, remember to consider the viscosity distribution within the glass. The lesson here is to consider the impact of viscosity and viscosity distribution on the degree of slumping when designing projects.

## The “Low and Slow” Slumping Strategy

By now you might feel that designing a slumping program might be impossible. Fear not, because there is a method that works. Many experienced glass artists use an approach called “low and slow,” which means to slump at a low temperature for a relatively long time. The concept is to heat the glass to the point that it starts to bend, then allow it to slowly slump into the mold. The time from when the glass starts to bend to the completion of the slump in typical molds is usually about 45 minutes.

The temperature at which glass starts to bend is going to be mostly a function of span. If the thickness of the glass is greater or thinner than 1/4 inch, raise or lower your estimate for the onset of slumping by about 20 degrees. If the piece is predominantly soft glass, slumping will occur relatively quickly after the onset. If the piece is predominantly hard glass, the slump will be slower.

Once the piece has started to slump, I make observations every 10 minutes to ensure that the piece is filling the mold properly. That means I attend every slump firing. If you make observations of the temperature at which the glass starts to bend and keep notes of the span, thickness, and glass color, you will develop a guide for the temperature corresponding with the onset of slumping.



(Figure 3) Glass rods of equal length have been slumped simultaneously to the same temperature. The stiff, viscous colors have slumped less than the soft, less viscous colors.



(Figure 4) The variation in viscosity from soft black glass to stiff white glass results in a lopsided slump.

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Margot Clark

## My "Typical" Slumping Schedule

The temperatures outlined below are based on the assumption that the project is made from a soda lime glass that is made for kiln formed applications. For most projects I heat at 300°F per hour, from room temperature to the onset of slumping, as decided from the discussion, and plan to hold at that temperature for one hour. During that hour I make observations every 10 minutes.

When the slump is complete, I use the "Skip Segment" option on the controller to terminate the current segment of the program and advance the program to the next segment, which is the beginning of annealing. There are two options if the slump isn't complete at the end of the hour or if the slump is progressing too slowly.

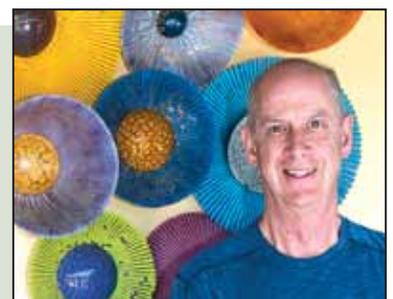
First, if the slump is almost complete, use the "add time" option on the controller to add 5 or 10 extra minutes. Second, I anticipate the possibility of the slump progressing too slowly by adding an extra hotter segment when I initially program the controller. If I anticipate that the slump will occur at, say, 1150°F, I will include a following segment that heats at 600°F per hour to about 1175°F with a 30-minute hold. If the slump is progressing too slowly at 1150°F, I use the "skip segment" option to advance to the hotter segment. On the other hand, if the slump is completed within the 1150°F segment I use the "skip segment" option on the controller to advance to the 1175°F segment, wait a few moments until the controller has completed the operation, and use the "skip segment" option to advance once more to the annealing segment. The annealing segments are programmed according to those recommended by the glass manufacturer for that thickness of project.

## Final Thoughts

By using the 5 factors listed above to anticipate how the glass will slump in the kiln and by taking a "low and slow" approach to slumping, you will have more control of the shape of the project and have fewer uneven rims because of accidental slippages within the mold. There will also be fewer or no marks on the underside of the bowl resulting from the hot glass touching the mold. With experience you will have more control over and success with your kiln formed glass art.

**GPO**

*Bob Leatherbarrow established Leatherbarrow Glass Studio in Calgary, Alberta, Canada, in 1988 and has created original kiln formed glass ever since. Known for his innovative styles, techniques, and designs,*



*he has taken an experimental approach to developing unique textures and color palettes using glass powders. His glass bowls and sculptures explore the subtle hues and delicate beauty of naturally occurring textures and encourage the viewer to ponder their origin.*

*In 2008 Leatherbarrow moved his studio to Salt Spring Island, British Columbia, where he continues to make glass and write e-books on his signature techniques. He has also been a popular instructor on both the national and international kiln formed glass scenes. Visit [www.leatherbarrowglass.com](http://www.leatherbarrowglass.com) to learn more about his work.*

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# Winter Is Coming

*Design, Fabrication, and Text by Robin Anderson*



### Compatible Fusible Glass

Clear Thin for Border, 10" x 14"  
Brown Opal for Border, 8" x 12"  
Dark Brown Opal for Fence, 6" x 12"  
Green Opal for Grassy Area, 10" x 5"  
Medium Gray Opal  
for Base Glass and Mountains, 10" x 8"  
Light Blue Transparent for Sky, 10" x 10"  
Orange/Yellow/Clear  
for the Sunset (optional), 10" x 10"

### Compatible Glass Opal Frits

White Yellow  
Sunflower Yellow  
Marigold Orange  
Persimmon Lemongrass  
Olive Green Dark Green  
Pewter Gray Charcoal Gray  
Dark Chocolate Chestnut

### Tools and Materials

Particulate Mask/Respirator  
Aerosol and Liquid Hair Spray  
60/40 Solder 3/4" Copper Foil  
Copper Sheet Gel Flux and Brush  
Fuser's Glue or Elmer's® Clear Gel  
Black Patina 17-Gauge Hi Fire Wire Rings  
Kiln (preferably 14" or larger)  
Grinder with Regular and Fine Bits  
Cutter Breaking and Grozing Pliers  
Brushes for Moving Frit  
Mosaic Nippers Burnisher  
**Optional but Really Handy**  
Morton System Earwax Vacuum

The snow line is creeping down the mountain peaks, the aspens are turning color in the valleys and hills below, and you know that winter is not far away. Closer to home, the grass is turning golden and brown, and trees in the backyard are turning color and losing their leaves. Nights by the fireplace are not far away. Yes, winter is coming.

This panel had its birth in the midst of “sheltering in place” this spring, as I kept myself entertained in my home studio that I was so very glad to have. Years ago, I was fascinated with Tiffany’s technique of glass plating, the stacking of several layers of stained glass to obtain stunning special effects of shading and coloring. I tried my hand at it. However, I was always disappointed at the harsh foil lines that had to separate the pieces but were essential to hold the panel together.

In my mind, the foil lines destroyed the continuity of the scene. That’s why I decided to try creating a plated piece using fused instead of stained glass, and after several attempts, *Winter Is Coming* was born. It is a combination of both techniques, as copper foiling is still necessary to hold the entire piece together. All of the elements that are plated and create the landscape are fused, however, and therefore do not require foiling. By putting one behind the other, they leave soft, natural lines that look much more organic.

## Tips for Getting Started

There is enormous leeway for you to “do your own thing” here. A lot of the decoration of each element is entirely for you to decide upon. For example, I happened to have some glass lace left over from another project to use on the tree, so I used it. You could equally well use some frit or even leave the tree bare if you wanted.

We are going to create, decorate, and fire everything separately, then do the final assembly. If your kiln is large enough (14" or larger), you should be able to do several pieces at a time, saving time and energy. The one large piece will require a 14" kiln.

Now a word about cutting. Glass tends to draw up when it is fused—the fewer layers, the more the shrinkage—but there is always some. Since a lot of the success of this piece depends on careful measurement, you need to allow for that by cutting some pieces wider or taller than the pattern pieces actually show. I have written this into the instructions and tried to do some little diagrams to help you out.

Also, a little motto here, “Work from the front, think from the back, admire from the front.” Yeah, confusing. You obviously have to do your work—cutting, shading, and whatever else—on your work space, front side up. But you will be attaching the pieces from the back, in order to give the distance effect visible from the front! Does that help?

The base glass and border are the areas where everything will start fitting together, so we’re going to start there. It has the nearest elements on it, and all the distant elements—the hills, mountains, and sky—will all go behind it.

## Border

- Cut the clear glass for the border, clean it, and place it in a jig to maintain accuracy. The Morton System is absolutely ideal for this purpose, since exact measurements are critical at some points.
- Cut strips of 7/8"-wide colored opal glass for the border and fit into the jig according to the pattern. I used brown here, but feel free to select a color of your own.
- If you plan to hang this piece, you need deeply embedded rings, since the piece will be heavy. Use rings made of Hi-Fire wire, 17 gauge or less for strength. Put one in each corner, cover with the corner pieces of the border; and glue the rings in place.

Put a couple of drops of Fuser’s Glue or Elmer’s Clear Gel under each piece and let dry.

## Grassy Area

Cut the glass for the grassy area base to *exactly* fit inside the border. You want it snugly touching the border glass so there will be no gap when it fires. Now it’s time to decorate the glass pieces. First and foremost, always wear your mask when using glass powders.

*Lay the powders for the grassy area down fairly thickly, but blend them into adjoining colors.*



The grassy area should look like patchy, drying fall grass, so you don't want uniformity in your powdering here. Use all sorts of yellows and golds—maybe some mix to make tan, maybe some yellow-green like lemongrass, maybe a bit of terra cotta or khaki in a couple of spots. Mostly use dry grass colors scattered about. Stay away from blue tints, using the warmer colors. I added a few confetti flakes I happened to have and loved the texturing it gave.

To fix everything in place, very lightly spray 3 to 4 light bursts of hair spray from about 2 feet high. Any cheap hair spray works, but keep it light so you don't disturb the powders. Let the glass dry, then set it carefully inside the border. You can now fire the whole piece—base glass, border, and grass—to a full or contour fuse.

## Fence

The fence will be tack-fused onto the clear glass, but you need to contour-fuse it first to get the right amount of smoothness on the edges. It can go in the same firing with the hills, the mountains, and the tree if you have that much room in your kiln.

- Cut out one copy of all the fence pieces and one copy of the fence piece spacers, all in the same dark brown. You can use any brown you want, as long as it's the same COE and is a different color from the tree. Cut the fence pieces to include the 1/8" tabs on the right, left, and bottom edges to give you a bit of leeway when placing because of the potential shrinkage. The tabs are shown on the pattern.

*A Note about the Tabs:* Several of the patterns have tab pieces on them. They are cut out of the same piece as the rest of the pattern, not as separate pieces, hence the dotted lines. The tabs are there to attach the pieces to the border during the foiling and soldering or to improve the appearance of the layering.

- Assemble the fence upside down, which makes placing the spacers easier, and glue them in place. When they're dry, turn the fence over carefully.

When everything is dry, it's ready for shading with powders. (Remember your mask!) When shading, work with the same color but varied darker shades. Decide where your sunlight is coming from. Look at the pattern and note the thin lines on the fence. Those are suggested shading lines based on the light coming from the upper right corner.

These are only suggestions! Even I didn't follow them exactly. Use the same dark brown color mixed with a little bit of black. Remember, black goes a *long* way, and you're already working with a dark color. If you want, you could add a teensy bit of green somewhere to look like moss. Now a spritz or two of hair spray, and off it goes to the kiln.

## Attaching the Fence to the Front Glass

2

*Tack-fuse the fence to the grassy area.*



After the fence has been fired to a contour fuse, it needs to be tack-fused to the decorated grassy area, which is already fused onto the clear glass and border. Be sure it touches with a tiny overlap on the borders. That's why you cut it a bit larger with those tabs so you will have enough fence to play with.

If the fence is too wide, you can grind a bit off, then polish the ends to a shine with diamond hand pads or other polishing equipment, or just leave them a bit long. Either way works.

## Assembling and Firing the Tree

Assembly for the tree is easiest done on a kiln shelf so you don't have to move it around.

3

*Cut out the pieces for the tree and assemble them in the kiln.*



Cut out a set of the pattern pieces, cutting them with the tabs and branches a bit longer where they meet the trunk. Cut or nip a bunch of random thin shapes that you can lay on top of the tree pieces. These serve two purposes. Most importantly, they hold the bottom pieces together when firing, but they also add bulk to the tree. You don't want the tree to look flat.

When you assemble all of the pieces, be sure that any connections between the trunk and branch pieces are covered with another piece of glass to ensure that they fuse together. Also be sure that the upper branches are overlapping where the border will be eventually. (See the introductory instructions about cutting.)

It is really important that the pieces seem a bit bigger now, because the glass will draw up when it's fired, and otherwise they may not be long enough to reach the borders afterwards. When you like the look, glue everything in place and let dry.

4

*When everything is dry, add the powders for shading the tree.*



I went ahead and contour-fused the tree first, but that's a suggestion and not required. Because of the rounded edges, I began shading by "painting" the section with liquid hairspray, then sprinkling on the powder. When it was dry, the powder gave enough "tooth" to hold more powder as I added it.

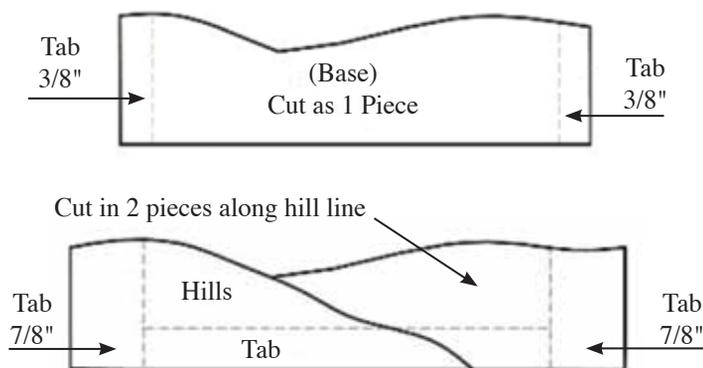
You need the same brown powder as the tree, a darker brown opal powder, and a blend of the two to soften the line between them. Refer to the suggested lines on the pattern for ideas. For the undersides of the branches, the forks, and the left sides, use the darker brown, then some brown powder beside it, and finally a 25/75 mix of dark and light browns blended over the contact line. Done! If you don't have dark brown, mix brown/black 80/20 or pound your own out of the dark brown glass you will be using for the fence.

Once again, when you have it just right, give it a few squirts of hair spray, let it dry, and clean up the excess powder. (Love that little earwax vacuum for this sort of work!) Now it is ready to be fired.

## Mid-Distance Hills

There are 2 layers of glass for the hills that are cut out of the same green glass. Note that the base layer has thinner tabs than the hills themselves, which will have the larger tabs that will be soldered to the border. Note also that the front piece, which will have the decoration on it, has an extension about 1/2" longer on the bottom edge than the actual pattern shows. That is going to make your final fitting *very* much easier.

Now cut the 2 hill pieces to the proper height. Be sure to cut each one so that they include the 7/8" tabs. They should look something like this diagram. When you do the final assembly, those tabs will lie flat on top of the border (as the whole thing lies upside down) to be foiled together, and the hills will be right side up, flat against the clear glass. Assemble the pieces, glue with dots of glue, and let dry. Now comes the fun part



5



*Decorate the hills.*

I used a really bright green, so I began by darkening it down with a uniform sifting of a mix of 75/25 olive green opal and dark green opal powders. Using the suggested lines on the pattern, add the yellow, which is a powder blend of yellow, sunflower, and a bit of marigold to darken it. Don't mix too thoroughly, since you want a variegated look.

Add a few dots of persimmon or orange if you like. You can move the powders around with a dry brush to get the effect you want. If you need to clean up some powder, the little earwax vacuum is the dandiest tool I have ever found for the job! Otherwise, just use a dry brush to work the offending powder off to the side.

Add the evergreen forest with a blend of 75/25 dark green/olive opal powder. Put it where you want it, and when everything looks perfect, spray with the hairspray like you did the tree and set it aside in a safe place. As soon as you have a full kiln, do a contour fusing of your completed pieces.

## Mountains

• First, cut the base glass out of the same gray as the mountains. Be sure to include the 3/8" tabs. Physical construction of the mountains is done much like the hills, just with more pieces.

• Now cut the pieces of the mountains themselves. *NOTE:* The mountain pieces that will butt up against the border need to be cut with the 7/8" tabs just like we did with the hill pieces, because these are the tabs that we will use for foiling. Also note that the mountains have the extension on the bottom, which you need to include in each mountain piece. Those are necessary because the mountains sit so far back in the piece. You want to be sure there are no gaps that you can see through.

• When everything is cut out, glue it together as usual and let dry.

6



*Decorate the mountain peaks.*

Add snow on the peaks, but don't overdo it. Winter is coming, but it's not completely here yet, so snow hasn't moved too far down the mountains at this point in time. Put the white powder on fairly thickly. *TIP:* If you want the edge of the glass to show white, use a brush to "paint" it with glue, then mound up lots and lots of white powder against it. Let the piece dry completely, lift it up, then inspect and repeat if necessary. You can reclaim the unused powder.

Use some darker gray in places to show canyons and deeply shadowed places, keeping in mind where the light is coming from. On the foliage, remember that the aspens will be at the lower altitudes, so don't put them too far up the mountains. Evergreens can go higher. Play around with everything until it's the way you like it. Finally, give the piece a couple of shots of hair spray and set it aside for fusing.

7



*Fuse the hill and mountain pieces to a contour fuse.*

## Sky and Sunset

This is the very last layer. You're almost done! The sunset is absolutely optional. I just happened to have that gorgeous glass piece in my scrap drawer. It was big enough, but just the pale blue glass would have worked fine by itself.

Regardless of whether you use one or two layers, they both need the additional 7/8" tab added to each side *and* on the top! They both also need the bottom extension to either overlap with the mountains or be fused to the mountains if you wish.

Note that when I did the contour fusing of the hill and mountain pieces, I fired the mountains directly onto the sky piece. It just made it easier to handle everything.

If you look very carefully, you can see that I embedded a second set of rings between the two sky pieces just as a backup, but they really aren't necessary. Don't bother with them. No need for any powdering or shading here.

### Timing and Firing

Depending on your kiln size, you can start firing pieces as soon as you have a full kiln. Go ahead and fire the clear glass/border piece while you're working on various other pieces. Once you have the fence fired, you can tack-fuse it to the clear glass without losing any definition. Other than those two firings, everything else is contour fusing.

*Note:* When preparing the pieces for firing, use some scraps of 3/8" fiber paper underneath the tabs on the hills and mountains pieces. That will help keep them from slumping down when firing. You want them flush with the rest of the piece.

These may seem like long firing schedules, but remember that we have several layers of glass in the same firings. In any case, all kilns fire differently, so adjust as necessary for your own kiln.

### Full Fuse Schedule for 96 COE

*Schedule to full-fuse the front panel with the border*

- Segment 1: Ramp 200°F/hr to 1000°F and hold 20 min.
- Segment 2: Ramp 200°F/hr to 1220°F and hold 45 min.
- Segment 3: Ramp 200°F/hr to 1460°F and hold 6 min.
- Segment 4: Ramp 9999 (AFAP\*) to 960°F and hold 90 min.
- Segment 5: Ramp 200°F/hr to 700°F and no hold.
- Segment 6: Ramp 300°F/hr to 120°F and off.

\*as fast as possible

### Firing Schedule for 96 COE Tack Fuse

- Segment 1: Ramp 200°F/hr to 1000°F and hold 20 min.
- Segment 2: Ramp 200°F/hr to 1220°F and hold 45 min.
- Segment 3: Ramp 200°F/hr to 1330°F and hold 4 min.
- Segment 4: Ramp 9999 (AFAP\*) to 960°F and hold 90 min.
- Segment 5: Ramp 200°F/hr to 700°F and no hold.
- Segment 6: Ramp 300°F/hr to 120°F and off.

\*as fast as possible

### Firing Schedule for 96 COE Contour Fuse

- Segment 1: Ramp 200°F/hr to 1000°F and hold 20 min.
- Segment 2: Ramp 200°F/hr to 1220°F and hold 45 min.
- Segment 3: Ramp 200°F/hr to 1370°F and hold 4 min.
- Segment 4: Ramp 9999 (AFAP\*) to 960°F and hold 90 min.
- Segment 5: Ramp 200°F/hr to 700°F and no hold.
- Segment 6: Ramp 300°F/hr to 120°F and off.

\*as fast as possible

### Assembly—Foiling and Soldering

Here is where we return to the traditional method of glass plating, since it is the only way to attach all of the elements successfully and keep the distancing intact. All of those pesky tabs that you cut will now line up together behind your borders, maybe with a bit of grinding so they align nicely, ready for foiling.

Before you actually start foiling, it is a very good idea to try lining everything up to see how it is going to fit. Lay the front piece upside down, preferably on a towel to protect the fence.

8

*Tape the pieces in place and check their placement.*



Lay the hill pieces in place with the front side face down and wrap a length of masking tape around both pieces to hold them in place. Check to be sure that there is no gap where you can see between the bottom of the hills and the top of the grass. They should show as just beyond the grass. Reposition if necessary and mark the tabs' positions with a Sharpie.

Next, take the mountain and sky pieces and repeat the process. There should be no gap between the bottom of the mountains and the top of the hills. In addition, be sure that the tabs on the two pieces match end-to-end and do not ride up on top of each other. If they do, you need to mark the overlap and grind it off so that they lie flat, end-to-end. Then check to be sure that the sky at the top does not have a gap. Reposition as necessary.

Finally, tape the mountain piece in place, recheck the placement, and mark with the Sharpie. Everything needs to fit as flat as possible.

Now start foiling everything. Use a good quality 3/4" copper foil tape. In most cases you will need to put 2 layers of tape on everything that has 2 layers of glass, and maybe elsewhere. This adds a good bond and strength and is well worth the extra tape.

Burnish extremely well. Remember, you are *only* foiling the entire "clear glass and borders" piece, and just the tabs of the other pieces, nothing else. Also, do not foil the inside edges of anything, for example, the tabs. If you do, they will show in the landscape.

*A very important note about soldering:* Be very careful when you are soldering that you do not leave your iron on any spot for more than a couple of seconds at a time. Don't assume, as I foolishly did, that all of this glass was fusible glass that had already gone through the rigors of at least one firing and that it would be less prone to cracking when in contact with a soldering iron. It isn't!! Keep that iron moving. If you have trouble with a spot, leave it alone and come back to it later. A crack in a piece of your glass at this point can be a disaster.

### Soldering, Final Foiling, and Applying the Patina

When you have everything foiled, lay the pieces in their proper positions, using the Sharpie marks to align everything. It's a good idea to tape everything in place one more time, turn it over, and check those gaps again. When everything is fine and all of the foiled tabs line up with the foiled edges of the front piece, gently flux those edges and apply dots of solder to hold everything in place.

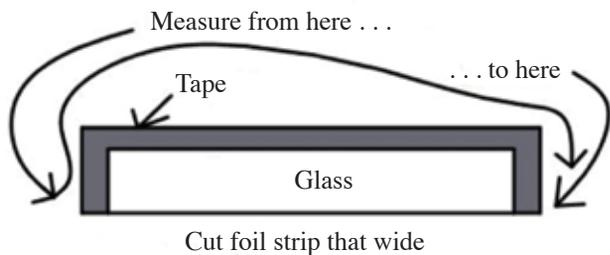
9

*Check the placement of the pieces, tack-solder them together, and clean the soldered area.*



Very carefully turn everything over, give a final check to the placement of all the pieces, and lay it back down. Flux and lay a flat solder layer down, just enough to “tin” it and hold everything together.

With a minimum of water, clean the soldered area as thoroughly as possible. Measure the entire width of the soldered area—the front, side, and back of the entire stack of soldered pieces. Cut strips of copper foil sheet that are wide enough and long enough to cover all of the soldered area holding the background pieces, up the left side of the panel, across the top, and down the right, as shown in this diagram.



Apply the copper foil sheet and burnish carefully. This is simply an added layer of security to be sure that the foil and solder will be able to support the weight of the panel when it is hung. Lay down the flat solder on the copper sheet, then add a decorative soldering if you wish.

## 10

*Clean and dry the piece, apply black patina if desired, clean again, and polish.*



Finally, clean the soldered areas with the least amount of moisture possible so that it does not run down into the landscape. Dry it carefully. If you wish, you can now apply the black patina for your desired effect, clean it, then polish everything with a good quality glass polish. Add a length of black chain to the rings, and you are nearly done.

### Adding the Tree

The tree is added last as an overlay, because it is so vulnerable being on top of the front of the panel. It is glued and soldered rather than fused to the piece.

Foil the bottom edge of the trunk and position the tree on the front of the clear glass. You will need to use a bit of steel wool to remove any patina from the foil on the border there so you can solder the pieces together.

The tree will physically rest on the border and the fence, and a branch may or may not rest on the border. Any part of the tree that does touch the border and fence should be glued using a strong glue like E6000. Put the tree in position, mark it, apply the glue in those spots, lay the tree on top of the glue, and allow it to dry. I taped it in place for security.

## 11



*Attach the tree.*

When the tree has bonded, flux and solder the base to the border. If there is a gap between the trunk and the border, put a little piece of the same brown glass, foiled, in the gap as a shim and solder them together. Clean and patina to match the rest of the panel and polish.

Finally, if you wish, it's time to decorate your tree with frit, glass lace, even freeze and fuse leaves. Use your imagination and look around the studio to see what you might have that will make it look gorgeous.

And you're done! You have created a real one-of-a-kind masterpiece that you can be extremely proud of. Congratulations!

**GPO**

*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 [rlandersn@suddenlink.net](mailto:rlandersn@suddenlink.net) as well as on Facebook at Sunnybrookstudio.*

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# The Holy Family Nativity

## Remembering the First Christmas

*Design, Demonstration, and Text by Angela and Werner Mirring*



To look upon the Holy Family is a delight for everyone. This 22" x 20" x 8" depiction of the first Christmas brings happiness and peace to all who see it and joy to artists who use their gifts in stained glass to create this divine scene.

Surrounding the setting with a wood frame helps to link the piece back to the manger and lets us imagine what it was like for Mary, Joseph, and Baby Jesus on that night in Bethlehem. This project is a wonderful way to feel the atmosphere of Christmas for the one who makes it as well as for the one who receives it.

### Preparing the Rose Window

This project consists of two sections. The background is the church wall with a rose window, and the second layer is the Holy Family. The rose window is made from a glass saucer. Select one that looks like a rose window in a church.

You will need to flatten the saucer in a kiln. Use a complete saucer for the upper rose. The center windows of the two other arches are glass rondels. The suggested firing schedule follows. Remember that all kilns fire differently, so you may need to make adjustments to the schedule for your own kiln.

### Firing Schedule

Segment 1: Ramp 150°F/hr to 930°F and hold 2 hrs.

Segment 2: Ramp 100°F/hr 1250°F and hold 2 hrs.

Segment 3: Switch off and cool to room temperature.

### Glass

Clear/White Wispy for Christ Child, Scrap White/Clear for Mary, Joseph, and Christ Child, Scrap White/Light Amber for Base and Holy Family, Scrap Light Amber/White Semitranslucent for Background Panel, 12" x 24"  
White Opal for Background Panel, 12" x 24"  
Brown/Gold Streaky Granite Semitranslucent for Joseph and Bottom of Background, Scrap Pink Champagne Opal for Faces, Scrap Dark Blue/White Semitranslucent for Mary, 6" x 8"  
White/Sky Blue for Mary, Scrap White/Light Gray for Joseph and the Christ Child, Scrap Gray/White Semitranslucent for Joseph, Scrap Pale Blue/White Semitranslucent for Mary, Scrap Orange/White Wispy for Joseph, 4" x 10"  
Red/White Semitranslucent for Joseph, 6" x 12"  
Clear Granite for Background and Side Panels, 10" x 28"

### Additional Glass

Saucer for Upper Rose Window  
Glass Rondels for Side Arch Windows  
1.75" x 3" Bevels for Star (6)

### Tools and Materials

#### For the Stained Glass Panel

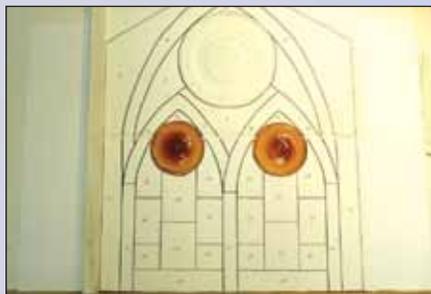
7/32" Black-Backed Copper Foil  
60/40 Solder 1/4" Grinding Bit  
Permanent Marker Pen  
Black Patina Car Wax

#### For the Wooden Church Frame

Electric Light Milling Machine  
Milling Cutter 6 mm, 1/4"  
Wooden Panels Wooden Base  
Wooden Pillar 1/2" Rod Pieces  
6 mm Diameter Brass Tube Resin  
Semicircular Border U-Channel Zinc  
Linen Cloth Wooden Jig

## Creating the Background and Holy Family Panels

1 Integrate the rose window and glass rondels into the background and side panel patterns.



You will need to adapt the other parts of the pattern to accommodate the fused saucer and the rondels. After integrating the new rose window and rondels into the pattern, make two copies of the background, side panel, and Holy Family patterns. Use one pattern for cutting the glass pieces and one as a layout template.

2 Cut out the pattern pieces and trace them onto the glass with a permanent marker pen.



3 Cut out all of the glass pieces for the Holy Family, background panel, and side panels.

I find that tapping the glass from the bottom, as shown in the photo on the right, helps me to get better results when breaking the glass.

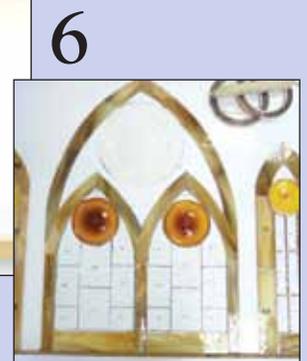
4 Use the grozing pliers to finish breaking off the small pieces.



5 Grind the glass pieces to smooth the edges.



6 Arrange the glass pieces on the template patterns.



Use a wooden jig when arranging the pieces on the pattern to ensure that the bottoms and sides of the panels will be straight. Cut the two triangular wedge-shaped pieces of glass that are shown here only if you want the panels to be self-standing instead of in the wooden church setting.

7

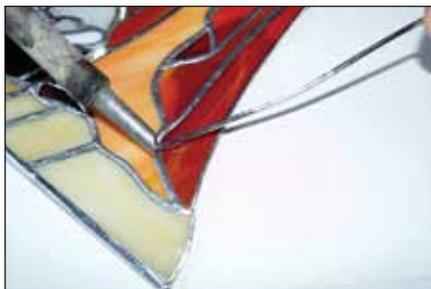
Foil all of the glass pieces for the background, the side panels, and the Holy Family.



Smooth the foil with a fid or burnishing tool, then reassemble the design on the template pattern.

8

Apply 60/40 solder to the Holy Family, background, and side panels.



9

Clean the panels with warm water and dish detergent, then apply black patina.



When the patina is dry, apply a layer of car wax and buff the panels by hand with a linen cloth. To give the edges a more finished look, apply semicircular border to the outer edges. Use U-channel zinc to finish the bottoms of the panels.

10

For a freestanding Holy Family panel, attach the triangular pieces of glass to the back of the panel.



Position the triangular pieces along vertical solder lines behind Mary and Joseph instead of in the middle of the panel so the pieces won't show from the front. If you have decided to use the wooden church frame, the extra triangular pieces of glass will not be used on the back of the panel.

11

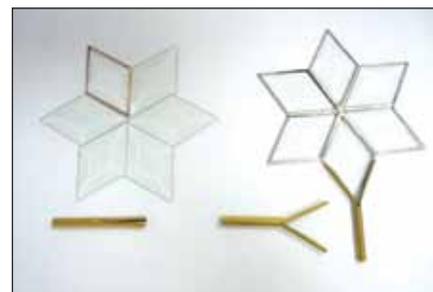
For freestanding background and side panels, solder them together at a 90-degree angle and brace the corners.



After the side panels are soldered to the background panel, attach a 2" piece of rod in each corner to help provide stability for the background. Cut and foil two additional triangular pieces of glass and attach them to the back of the panel to serve as perpendicular holders. As for the Holy Family Panel, these pieces of glass will not be used if you are using the wooden church frame instead.

12

Create the star for the top of the background.



Foil and solder the 6 glass bevels in the shape of a star. Cut a 1/4" length of the 6 mm diameter brass tube in half lengthwise. Bend the halves open in a V shape until it is equal to the sides of the star's bottom bevel.

13

Glue the star onto the back of the background panel with resin.

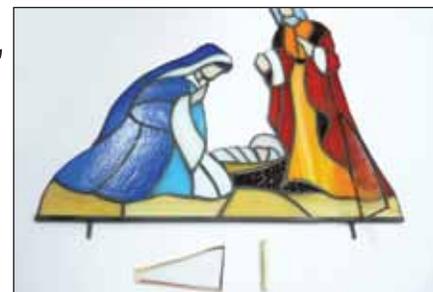


### Building the Wooden Church Frame and Base

With the perpendicular pieces added to the background and Holy Family panels, they are now able to stand alone. You can arrange them on a board and add candles, but if you prefer to give the scene a more majestic look, mount the panels in a wooden church frame. You can produce the church yourself with the following steps or have a carpenter make one for you.

14

Add U-channel zinc and two pieces of rod to the bottom of the Holy Family panel.



Add a length of U-channel zinc to the bottom of the Holy Family panel for stability. Now solder two 1/2" pieces of rod onto the bottom to use for adding the panel to the wooden base.

15  
Arrange the background and the Holy Family panels on the wooden base and mark their positions with a pencil.

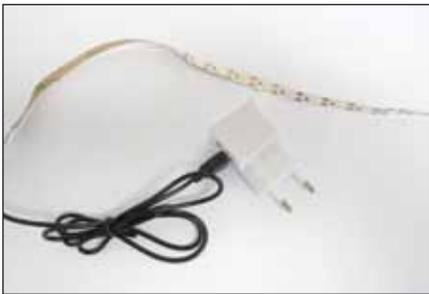


16  
Mill notches and holes in the background holder and the pillar to hold the glass panels.



For the background, you need to mill a 1/4" (6 mm) notch. For the Holy Family you will need to drill two holes for the two rods.

17  
To illuminate the church, use a 5 volt USB LED strip lamp.



You now have a beautiful reminder of that first holy night to cherish all year long.

**GPO**

Angela and Werner Miring had their introduction to glass in 1993 in Germany working in a factory that produced glass X-Ray tubes. They later began to work at home with stained glass creating window hangers, door inserts, modern lamps, and objects for home and garden decor. For many years, Angela has also taught art at a night school, combining glass and wood in a way that shows how these two artistic elements are connected with nature.

Angela and Werner live with their dog Bella in Rudolstadt, a town in Thuringia, called the green heart of Germany. Visit their shop at [Tiffanyglas.shop](http://Tiffanyglas.shop). For woodworking questions on this project, you can contact Werner at [info@tiffanyglas.shop](mailto:info@tiffanyglas.shop).



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# Holiday Gift Coasters

*Design, Fabrication, and Text by Nonnie Lyketsos*



Remind your special someone that springtime will soon be here with this cheerful holiday gift that features insect millefiori and powder wafer flowers. It's easy to make dozens of powder wafer flowers in one firing so that you have a nice stash for this and future projects.

## **Bullseye Glass Co.**

### **90 COE Compatible Glass**

000137 French Vanilla Fusible Glass  
for Coaster Bottom, 4" x 4"

Clear Fusible Glass for Coaster Top, 4" x 4"

Colored Powder Frit for Flowers and Leaves

Clear Powder Frit

Green Stringer for Stems

### **Additional Glass**

Insect Millefiori

### **Tools and Materials**

Manila File Folders or Other Thin Cardboard

Razor Blade X-Acto® Knife

Stencil Cutting Machine (optional)

Powder Sifter Kiln Shelf Paper

Glass Cutter Glue (optional) Rubber Bumpers

Cup of Lukewarm Water Respirator Mask

**1**

*Cut stencils for the flower and leaf shapes, place the stencil on kiln shelf paper, and sprinkle the powdered frit onto the stencil.*



First, make a stencil (or stencils) for your flowers and leaves. You can make all of the flowers uniform in size or vary the size and shape, but remember that they can shrink up to 50 percent.

Next, line your kiln shelf with shelf paper. Kiln wash may be used. However, it has a tendency to stick to the back of the flowers, so make sure it is bone dry.

Sift colored powder over the stencil in four even passes, trying to keep the flowers an even thickness throughout. Sift clear powder over the stencil in two more passes, for a total of six even passes to achieve the proper thickness before firing. **Remember to wear a respirator mask while working with glass frits and powders.**

If desired, you can lift the stencil at this point and add little centers to your flowers in a pop of corresponding colors. **Note:** Lift the stencil straight up in a smooth and steady motion to avoid disturbing the powder. If you mess it up, just gather the powder and try the process again. The mix of clear and colored frit will not alter the color of your flowers.

Fire the flowers in your kiln at the following schedule:  
Ramp 9999 (FULL) to 1360°F, hold for 5 minutes, and off.

The kiln door can be cracked as soon as the firing is complete, and it will not harm the newly made powder wafers. Wash the wafers by immersing them in a cup of lukewarm water.



**2**  
Cut the 4" glass squares for the coasters and decorate with the glass design elements before firing the coasters.



Cut 2 pieces of glass for each coaster—a 4" square of French Vanilla for the bottom layer and a 4" square clear for the top. Arrange your powder wafer flowers and leaves on the top layer, then add the insect millefiori. Pieces of green stringer can be added for stems.

**Note:** You may attach the embellishments with super glue, GlassTac, or watered down Elmer's, but the purpose of the glue is to get the piece from the worktable to the kiln. It's not essential as long as you don't bump them out of place.

Fire at the following suggested schedule or whatever works best at Full Fuse in your own kiln.

### Full Fuse Firing Schedule

- Segment 1: Ramp 300°F/hr to 1000°F and hold 1 min.
- Segment 2: Ramp 600°F/hr to 1225°F and hold 15 min.
- Segment 3: Ramp 9999 (AFAP\*) to 1500°F and hold 10 min.
- Segment 4: Ramp 9999 (AFAP\*) to 900°F and hold 30 min.
- Segment 5: Ramp 150°F/hr to 700°F and no hold.

\*as fast as possible

**3**  
Attach rubber bumpers to the bottom of the coaster.



When the kiln has completely cooled, remove the coaster, rinse and dry. To finish, add rubber bumpers, which you can find in the furniture section of your home improvement store, to the bottom of the coaster.

**GPQ**



Nonnie Lyketsos owns Radiant Glass Studio in Chicago, Illinois. In addition to making original dinnerware and fused glass floral art, she has had the privilege of teaching at the Studio of the Corning Museum of Glass, Weisser Glass Studio, and the Chicago Glass Collective, among others. Her work can be seen at [www.nonnielyketsos.com](http://www.nonnielyketsos.com) and on Instagram @radiantglass.

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# Taking the Mystery Out of Your Kiln

by Arnold Howard

Imagine that your kiln has stopped working, and you are trying to find out why by looking at the wiring diagram. Note that trying to diagnose your kiln is not something you want to do when you are tired. Get rested. Drink coffee if necessary.

- **First, unplug the kiln or disconnect the power.** Open the switch box or control panel of your kiln by removing the screws that hold it in place. Prop the switch box so you can see inside without having to hold it upright. Lean the box so that none of the wires are strained and pulled taut.

- **If you don't have a wiring diagram, look for it in your kiln instruction packet or go online to the manufacturer's website to print it.** Get comfortable before you begin looking at the wiring diagram. If the kiln is at table height, find a chair. If it's on the floor, sit cross-legged. Do not crouch uncomfortably. Place a work light nearby and have colored pens on hand. Good lighting and being comfortable are essential.

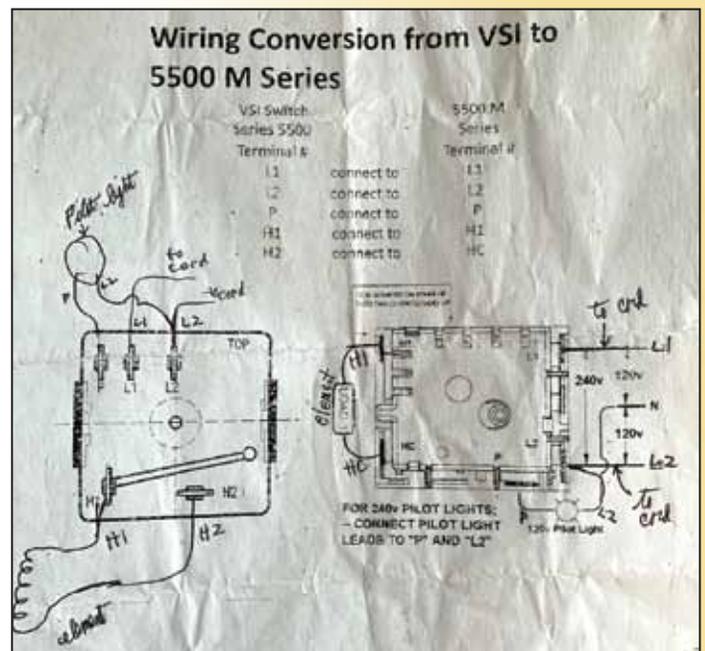
- **Once you are comfortable, take your time looking at the wiring diagram.** Look from the diagram to the wires inside the switch box, then back to the diagram. At first the wires will be confusing, but the longer you look at them, the easier you will see the logic behind them.



*In this kiln, banks of roof, door, and wall elements were controlled by a combination of relays and switches. I had to take my time examining one wire at a time on this kiln. Then everything began to make sense.*



*If you have to reach past lots of wires to replace a part, do not disturb the wires that are in the way. It may help to label parts as shown here.*



*Write notes on the instruction sheet and draw labels on the parts. In this example, I held switches next to the diagrams on the instruction sheet to compare them. Any time a diagram looks complicated, compare it with an actual part.*

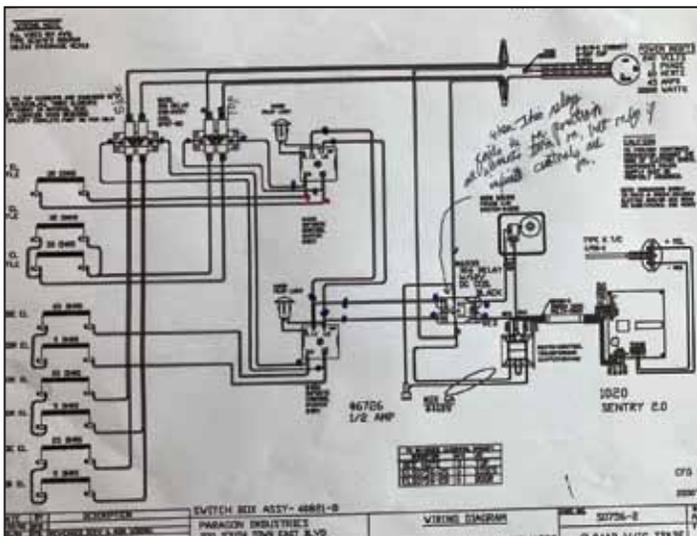
- As you look at the switch box, find the switches, relays, and other parts that are shown in the wiring diagram. One by one, examine a part and check each wire that is connected to it. Make sure the connections are tight at both ends of each wire. One time I just touched a wire, and it fell off a relay from underneath a loose screw.

- Tighten connections, if necessary, crimping new terminals to wires. As you check each wire connected to the part, check the other end of that wire to be sure it is connected properly at both ends. The wiring diagram will show you where the other end of each wire goes.

- After you examine both ends of a wire, find that wire on the wiring diagram. Place a colored dot at each end of the wire on the diagram. After you finish checking the wires on one part, move on to the next part.

- If it's difficult to reach into a switch box to change a part because the wires are in the way, slow down. Imagine you are a surgeon and the wires are delicate and cannot be disturbed. You must take your time.

GPO



Place a colored dot at each of the wires in your wiring diagram after you check the connections. Write notes on the diagram as I have done here.

Since 1977 when Arnold Howard began working at Paragon Industries, he has seen kiln controls evolve from switches to touch screen displays. He helped test the early glass kilns and wrote Paragon instruction manuals, newsletters, and advertisements.



Arnold has taught kiln classes at trade shows, Bullseye Glass in Portland, Oregon, and in Australia and England. He started Howard Kilns, a repair and kiln sales business, in September 2019. Arnold works on all brands. Feel free to contact him at [arnoldhoward@gmail.com](mailto:arnoldhoward@gmail.com) or (972) 333-1437.

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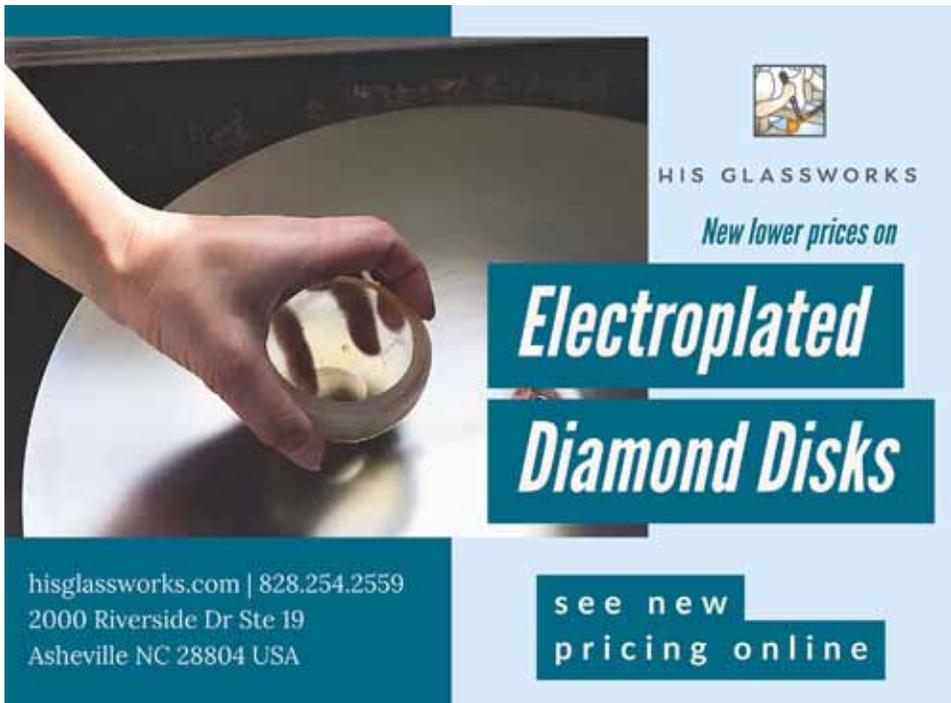
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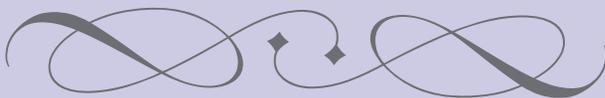
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- 2.5" High temperature ceramic Fiber lid
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