Stained Glass Pattern Preparation
How To, Tips & Tricks

You have selected the stained glass pattern you want to make. Now you need to take that single image and turn it into the pieces that will help you make that image in glass. Creating accurate pattern pieces is a crucial first step to setting yourself up for success in executing that design. We'll start by making a few essential decisions:

Question 1: What construction method?

A project executed in copper foil is prepped differently than one being assembled in lead came or as a mosaic. It's all about how much space you need to leave between the glass pieces to account for the thickness of the lead came, copper foil or grout. If you don't, your project will end up growing and be larger than the original design when finished.

Question 2: Where is this going?

Are you installing the piece in a frame or opening such as window or door or is the final size not critical as it will hang freely? If you are making a free hanging piece you can make it to the dimensions you want knowing that any frame or came border you add will increase its overall dimensions by their width.

For a piece going into a specific opening size, you need to ensure the pattern will produce a panel that will fit! Measure and re-measure the opening at several different locations side to side and top to bottom; many openings are not truly square. Once you know your needed length and width, subtract 1/8" from each for the final build size. This will give a bit of wiggle room for installation. Keep in mind that if you are adding a lead or metal came border to the piece, the outer edge of the pattern is the outside edge of the came. Make any needed changes to the pattern so any border pieces fit into it correctly.

Question 3: What colors?

Choosing colors for your design can be intimidating but having a color plan will make purchasing glass and construction much easier. Make several photocopies of your pattern, grab a box of colored pencils or markers and try out different color schemes. Experimenting now will save you time, money, and potential dissatisfaction with the finished piece. Once you have a color scheme you like, use it to help select glass and determine how much of each glass you will need.
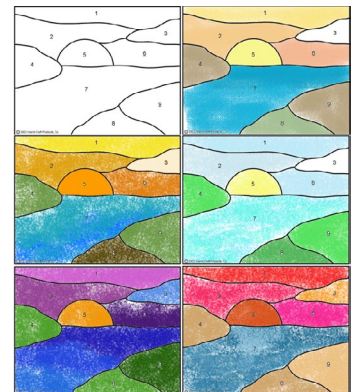
Question 4: Does it need reinforcing?

The best time to consider your reinforcing options is during pattern design. However we often are using or modifying a published pattern and the author doesn't know where that piece is going or how we may resize it. A very general rule of thumb is to reinforce panels over three square feet but like any rule, there are exceptions. Whether you need to reinforce or not is beyond this article but if you determine reinforcing is needed, mark your pattern with its placement to remind you during cutting and construction.

From Pattern to Pattern Pieces

With your pattern sized and a color scheme selected you will need to number all the pieces in your pattern. How you do that is up to you but make sure every piece in your pattern has a unique number. At this time you can also make notations on the pieces indicating the glass they are to be cut from, a grain direction you want them to have, a shading direction you want them to have, or any notes you deem helpful - this is your road map to your final vision of the project.
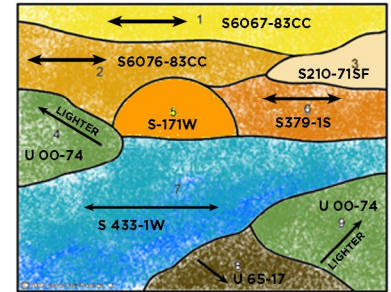
With your pattern now sized, numbered, and notated it's time to make some copies. You want to end up with a pattern piece copy (template) and an assembly copy in addition to the original pattern, called the cartoon. This means making two copies minimum but many opt to make an additional copy just in case something happens to one of the others during construction.

Supplies you need:

- A sheet of oaktag, tagboard or similar weight paper slightly larger than your pattern. Think manila file folder weight. This is the copy you cut up into the individual pattern pieces (templates) that make up your design.
- A piece of medium weight paper slightly larger than your pattern. This can be kraft paper, butcher paper, medium weight drawing paper, even graph paper. This is the copy you will assemble your piece on and that tells you where each of those template pieces go.
- Your original drawing, the cartoon, your road map for the final design.
- Carbon Paper: Two sheets slightly larger than the original pattern
- Tape and / or push pins to hold all these layers in place. Drafting tape holds well but is easy to remove from pattern pieces without damaging them.
- Ruler or other straight edge for drawing and tracing straight lines.
- Ball point pen, preferably a color (like red) different from pattern line colors in your cartoon.

Making your copies:

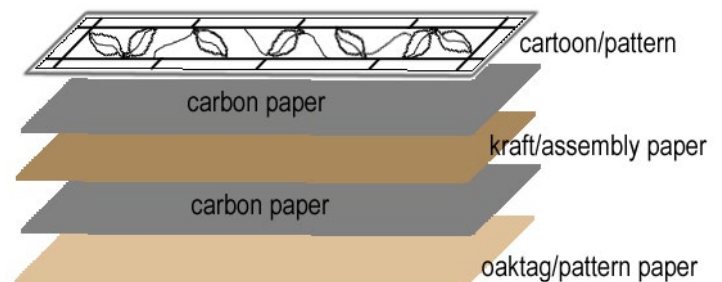On a flat, firm surface, assemble the pieces in the following order, top to bottom:

Your pattern / cartoon

Carbon Paper (carbon side facing down)

Assembly layer paper (kraft or similar)

Carbon Paper (carbon side facing down)

Pattern piece layer (oaktag or similar)

If you want to make that additional copy so you end up with three copies plus your original, add in another carbon paper and assembly layer paper under the cartoon layer.

Secure the layers in place using tape and / or push pins; you don't want the pieces to shift while tracing. Use the ball point pen to trace over all the lines in your cartoon, pressing firmly; you need the lines to transfer cleanly to all layers. Use a ruler when tracing straight lines to ensure they remain that way. Using a colored pen (like red) makes it easier to see which lines you have traced and which remain. Double check your tracing and don't forget to put in all of the notations you made before you disassemble the layers.

You can make copies using a photo copier but take care as copiers do distort, especially when enlarging or with large originals. You may want to consider a commercial copy or blue print service that is geared for making large, precise copies. If you do use a copier, check your pattern copies for accuracy before cutting any glass. Another option is to use an overhead projector to project the pattern on the wall to size and then trace it onto the layers.
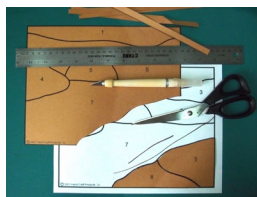
Cutting out the pattern pieces

First you want to cut around the entire outside edge of your pattern piece (template) layer. Use a ruler and craft knife if these are all straight lines. You can use regular scissors if you have curves or a very non-linear outer edge.

Copper foil tape and the heart of lead came take up space around your glass pieces. If you don't compensate for this your project will "grow" ending up larger than its original dimensions; especially troublesome if your piece is being installed into a fixed opening such as a window or door. Pattern shears are a special three-bladed shear that fix this problem by removing a specific amount of space between the pattern (template) pieces as you cut them apart.

FOIL   LEAD   MOSAIC

Because that space taken up differs between construction methods you will find pattern shears specifically for foil, lead, and even mosaic. Lead shears remove about 1/16", foil shears remove about 1/32", and mosaic shears remove about 1/8" between pieces. If you like a thinner grout line you could use lead shears instead. Make sure you use the correct shears for your assembly method. If you only have regular shears you can compensate by cutting away the black line from all the pattern pieces, in essence, cutting each pattern piece twice.

cut with lead shears   cut with foil shears
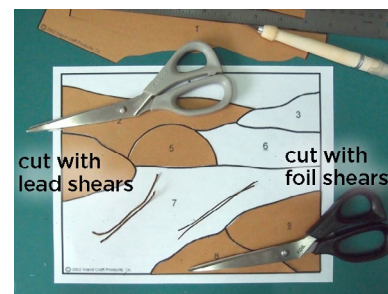
Here are a few tips for using pattern shears:

- Stay in the throat of the shear when cutting, especially when cutting curves.
- Using short, quick strokes will help keep the paper from jamming and folding over instead of cutting. Any folded overs can be trimmed away using a craft knife or regular scissors.
- You can rub the single blade of your shears with a candle to keep the thin strips of paper from sticking between the blades.
- Try turning the paper instead of the shears as you cut curves.
- Plan your cuts to avoid having to cut sharp turns or curves deep in the pattern center. Find straighter cuts to make first that will break the pattern into small, more manageable pieces.

What to do with all those pieces?

With your pattern (template) pieces all cut apart you many want to do some organization. A logical choice is to sort the pieces by the glass they will be cut from. This makes it easy to then layout all the template pieces on that glass, know you have enough, and that they will fit. You could also sort them by their place in the pattern: border, flower, leaf, background, and so forth. You could also put each template in place over its corresponding place on the assembly copy using tacks or pins will keep them in place until they are removed for cutting.

Pattern material alternatives

You aren't tied to using oaktag or similar to make your pattern (template) pieces. You aren't necessarily tied to making pattern pieces. There are other materials and methods you can use:

- Transparency Film: These are very durable and you will often see them used in patterns where multiple copies are cut or a single pattern piece is cut multiple times as in a lamp with repeated sections. They are quite durable and being waterproof they stand up to grinding. Being clear they do make it easier to see the details of the glass as you are laying them out. They are more expensive and you will have to draw or have

the design printed onto them using a permanent ink as opposed to transferring using carbon paper.

- Mylar: Like transparency film, it is durable and used in patterns where multiple copies are cut or a single pattern piece is cut multiple times. It can be clear or have a slight frosted look but both allow you to see the details of the glass for easy layout. Again you will have to draw or have the design printed onto them using a permanent ink as opposed to transferring using carbon paper.
- Contact paper: Used for the pattern (template) layer it lets you stick the template pieces right onto the glass. It also stands up to grinding and easy to remove. You can use carbon paper to transfer the design to it. It can be a bit touchy to cut apart using pattern shears.
- No Templates: If you are using glasses you can see through you can just put the glass over the pattern (cartoon) and trace the pattern right onto the glass. A light table or lightbox is often used to make it easier to see through the pattern and glass. Be aware that when tracing this way it is difficult to be really precise and projects with tight tolerances (copper foil, narrow lead cames) are not really suitable for this method.

Using Digital Patterns

Today computers and software programs have brought the paper pattern to the digital age. You can now scan a print pattern and bring it into a program for editing, purchase patterns already in a digital format or even totally design and draw a pattern digitally.

One of the biggest advantages to using pattern design software is that you can resize with just a few clicks of the mouse. Another plus is that many of these programs have glass libraries from various manufacturers you can then use to work out the color scheme of your design. Many of the programs will also number your pattern for you and give you shopping list showing how much of each glass you will need. Some even have the capability to design in 3-D for making lamps and similar.

If working digital is something you would like to try, most of these programs and services have a demo version or offer a free trial you can use before purchasing. You can also find many free digital pattern files available for download that you can then alter either in another program or by hand. An internet search for "stained glass pattern software" will get you started!

Other Free How To Guides

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