Stained Glass 101

hands-on info for the hobbyist

by Brian McMillan

Using and Abusing Bevels in Art Glass Projects

Bevels can add sparkle and clarity to a stained glass project that can not be attained using any other type of glass. Bevels start off as 4 to 6 millimeter thick plate glass, the same thing you have in your household windows, but thicker. The glass is cut to shape—not always an easy task for difficult shapes—and then beveled. The first step in beveling is to hog out the bevel. This means to remove all the excess glass on the edge to establish the angle of the bevel. This is done using either a liquid slurry of silicone carbide or a large flat wheel with industrial diamonds bonded to it in the same way they are to grinder bits. The hogged out edge of glass is now a dull white color and scratched from the abrasive. The next three steps are to polish out the scratches to leave you with a clear, ripple free edge. As you can imagine, all this takes a lot of time and experience. Twenty years ago, all bevels were hand made in North America by small beveling shops. I used to have bevels made by a gentleman who apprenticed in Poland. It was amazing to watch him put a 1½" bevel on a 4'x2' piece of glass. However, now 90% percent of the bevels available are made in the Orient. We have straight line bevels which are made on machines and bevel clusters, composed of many curved and sinuous lines which are still made by hand.

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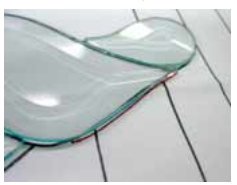
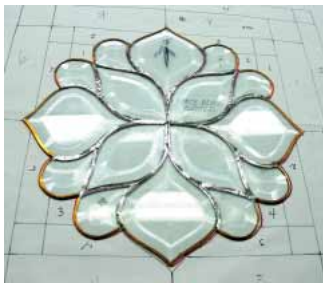
The first law when using bevel clusters is, "No bevel is ever created equal." This means that you must assume that every time you use a bevel cluster you will have to adapt your pattern for a good fit. I don't want to give the impression that most bevels are poorly made—there are many reasons why bevels may vary from one to another—but it is a reality we must work with. If the bevels are too small, I place the cluster on the pattern, use a **red** fine felt pen and trace around the bevel. By using the red pen, you won't get confused later as to which is your cut line. This will really only help you improve the fit on the perimeter of the bevel cluster, however gaps between the beveled pieces usually are within acceptable tolerances. Another option is to foil the bevels, assemble them as well as you can on the pattern, tack solder them together and trace around the assembled cluster.





Stock bevel shapes—squares, rectangles, diamonds, circles etc.—are all made on very sophisticated automated equipment. This guarantees that they are consistent in size from shipment to shipment. When using these bevels to create your own designs, I find that it is best to trace around the bevels on your pattern with a fine tipped felt pen. This will ensure that you don't have to do a lot of grinding.

Occasionally, the bevels are slightly big for my pattern and I grind them to fit. You can only remove about ⅛" of the bevel before the beveled edge will become noticeably narrower. (To draw the viewer's eye from this problem, use a very narrow foil where the bevel has been ground deeply. Otherwise, use 7/32" black backed foil with bevels unless the design has lots of small pieces, then use 3/16" black backed foil. I use black patina on beveled projects. The silver solder doesn't have enough contrast with the bevels).

Shaping Bevels

Lightly grind all bevels to remove any flares and to rough up the edge so that the foil will adhere properly. It is a good idea to use a **fine** grit grinding bit so that you don't chip the bevels. Grinding bits come with ***fine grit*** (220 mesh diamonds), ***standard grit*** (100 mesh) or ***coarse grit*** (60 mesh).

Be very careful not to scratch bevels while grinding or during soldering. Ground glass on the grinder work surface or solder balls on the table during soldering are common ways to scratch bevels. To prevent this, large bevels should have masking tape placed on their back and front surfaces to prevent scratching. Always clean your grinder work surface and work table thoroughly, and often, when working with bevels.

Cutting Bevels

Bevels can be cut quite easily—this is the abusing part. I recommend scoring on the back, flat side, of the bevel. If your score is straight, break the glass using your running pliers. Use firm pressure to keep the pliers from slipping. It will require a little more pressure than standard thickness glass, so don't hesitate to use your muscles. More difficult shapes can be cut using a band saw or by using your grinder to fine tune the shape after you have cut it. The thick part of the bevel will require a thicker foil to provide an equal amount of overlap of foil on the edge. This bevel has 7/32" black backed foil on the uncut sides and 5/16" on the cut side. Use a craft knife and flexible ruler to cut off any excess foil where the different widths of foil overlap.

I hope that this article has provided you with a few tips that will allow you to use and abuse bevels with more confidence.

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