



## Concrete Bungle

Romancing the stone with easy stained glass steppingstones for your garden

### Materials:

- Variety of Stained Glass
- Slate or other stone or tile for background
- Portland Cement-based masons' mortar
- Concrete mix
- Acrylic admixture - sold in large bottles and looks like thin white glue
- Chicken wire for reinforcement
- Two-inch thick builder's insulating foamboard - high density
- Piece of plywood large enough to hold the form
- Clear contact paper
- Screws and washers to attach the foamboard to the plywood
- Petroleum jelly used as a form release agent

### Tools

- Glass cutter - the wheel type is easiest to use
- Light machine oil (sewing machine oil works fine)
- Pliers for breaking the glass after scoring it
- Grozing pliers for chewing the edges of glass
- Hammer and nail for breaking the slate
- Trowel
- Hoe for mixing
- Mixing trough, bucket or wheelbarrow for mixing
- Screwdriver or drill/driver
- Knife to cut the foam

## Steps:



Stepping stone with slate and stained glass



Gather a selection of opaque glass pieces



Locate some slate, either from a roofer or stone setter

### Knowing your glass from your elbow

First, locate a nearby stained glass shop in your yellow pages, and drop in. For this project, avoid transparent glass that looks dull against a solid background. Instead, go for rich shades of opaque marbled glass.

Most glass shops keep a bargain bin of scrap pieces. Scour the bin. If you still don't have enough colours, buy some larger pieces as well. Also buy a glasscutter, an inexpensive cutting wheel set in a short handle. Toolhounds might consider buying both 'breaking' pliers and 'grozing' pliers to trim glass into precise shapes.



A wheeled glass cutter is the simplest to learn to use



To cut the glass, press firmly while rolling the cutter over the glass

Go home, don your gloves and eye protection, and practice cutting. Score the glass with straight or curvy shapes by steering the glasscutter while pressing down firmly enough to create a crisp, searing sound. Never go over the same cut line twice.

**Tip:** If the wheel is skipping or popping, run it through some light oil to lubricate the cut.



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Two kinds of pliers assist in cutting the glass to shape



Breaking pliers have a wider mouth and are used to break the glass after scoring with the cutter



Grozers are used to 'chew' away the edge of the glass



Use the breaking pliers to break along the line, down and away from the scored line

Don't dawdle once you've scored the glass; glass has a crystalline structure that tends to repair itself. The longer you leave it, the harder it is to break. Using pliers or gloved hands, break the glass along the scored line. Always break away from the cut line and never towards it. That's all there is to it. If the glass breaks strangely or doesn't follow the scored line, trim it with grozing pliers, or just start over. You'll get a feel for it quickly.



Use your gloved hands to break the glass down and away from the cut along the line



Place the sticky side of a sheet of clear contact paper on top of the glass, pressing so it adheres



Turn over the paper and glass

Arrange your design the way it will appear on the stepping stone. Be sure to leave at least 1/8" between the pieces to allow the mortar to flow properly. Place a sheet of clear contact paper over the pieces and stick them down. Lift the sheet of paper with the glass stuck to it and turn it over so that the glass is once again exposed. The contact paper prevents the pieces from swimming around when you start pouring mortar over them. When your design is complete, set it aside. It's time to make the mould.





Prepare a form using a piece of high density insulating foam



Cut the desired shape for the stepping stone



Place the design under the form on a small piece of plywood

### Never too mould for it

You can use anything for moulds - storage tubs, baking dishes or the bottom of a pail. But if you want to make a custom shape (i.e. butterfly, flower, stegosaurus) use a piece of 2" high-density Styrofoam sheathing, which is sold in 2' x 8' sheets in the insulation aisle at your home center. Using a bread knife or keyhole saw, cut the shape you want, remembering to bevel the sides at about the same angle as a cake pan, so your steppingstone will pop out easily later. It also helps to coat the inside edges of the form with petroleum jelly.



Fill in the background design with slate



Use screws with washers to attach the form to the plywood

Place the glass-covered contact paper on a piece of plywood. Lower the Styrofoam form over the glass design, and then screw the Styrofoam to the plywood so nothing moves around. (Use washers under the screw heads to ensure tight contact between the form and the plywood.)



The stepping stone is made up of several layers



Use acrylic admixture to strengthen the mortar and the concrete

### The mortar the merrier

The steppingstone is composed of four layers: glass on the surface, then a layer of mortar that flows around the glass pieces, then a piece of chicken wire to stabilize the stone during expansion and contraction cycles and, finally, a layer of concrete for strength.



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**Tip:** To freeze-and-thaw-proof your steppingstone, use acrylic admixture instead of water when mixing mortar or concrete.



Mix up the mortar first



Place the mortar carefully in the mould over the glass

Mix up enough mortar to fill the bottom of the form an inch deep. About twelve cups of dry powder was enough for the stone I made. Be careful to use cement mortar, which is sold in bags in the masonry or tile section of your hardware store; don't use concrete! Mortar is fine enough to fill the cracks between your glass pieces. Concrete isn't.

Mix the mortar to the consistency of muffin dough - not too wet, but not lumpy either. Pour it into the form about an inch deep.



Place poultry wire on top of the mortar



Fill the remaining space with concrete

Cut a piece of chicken wire slightly smaller than the form and place it on top of the wet mortar.

Now mix a batch of concrete, and pour it on top of the chicken wire and wet mortar until it fills the form.

Now knock the underside of the plywood with a hammer or bump the whole thing with your hip until air bubbles stop popping on the surface. (This makes a much stronger stone than if you leave it porous.)



After it has cured for two or three hours, remove it from the form



Remove the contact paper



Wire brush the surface to clean it up and soften the texture



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After it's set up enough (3 - 8 hours) that you can't dent the concrete with a fingertip, remove the steppingstone from the mould and peel off the contact paper. Run a wire brush over it to soften the edges.



Scrape clean the surface of the glass and stone

Be sure to thoroughly clean the glass and the stones because the acrylic additive will permanently coat the surfaces if you don't nab it early.

The stone won't cure fully for about six weeks, so keep it at room temperature until then.

Be sure it is completely dry and then seal the whole thing with concrete or grout sealant, so it lasts forever.



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