

Background Guide

To make the most of the terrarium's space, some sort of background should be used. A flat, even substrate layer has limited planting and design capacity, while the right background can double your available planting space, not to mention provide a much more natural habitat for the animals. This isn't limited to just the back of the enclosure; the sides can be done in the same way to give an incredibly realistic view into the habitat. There are several routes you can take, including premade flat panels, pressed organic panels, or custom fabricated backgrounds.

Preformed panels: The most common and easiest material to cover the back and sides of the tank are usually some form of pressed organic panel. Tree fern and cocopanel are the most popular, both available in various sizes that are simply glued right onto the back of the habitat. The tree fern seems to hold up better in the damp environment, being incredibly well draining. It is an excellent substrate for growing epiphytic plants on, and will often develop a dense coating of moss in just a few weeks of misting. Some people argue that it will break down, but I've had it hold up for years in heavily misted setups with little or no decomposition. Cocopanel are sometimes available through European companies and work in a similar way, but hold more moisture.

An artificial alternative to tree fern that has started to become popular is commercially known as Epiweb. This is a synthetic mix of plastic fibers that is similar in texture to tree fern or very coarse filter material. Its main advantage is that it will never break down, even in the wettest of systems. On the downside, it is expensive and doesn't hold as much water so it really only works well in heavily misted terrariums. There are many other similar products worth trying, such as black or green coarse pond filter foam. That can be purchased in huge rolls if one desires, and is a good alternative to the Epiweb. All synthetic materials will take awhile longer to get covered in moss and plants since they have no organics to hold moisture or nutrients.

Spray Foam with Organic Coatings: Another new idea that has become very popular is to build a background from scratch using spray foam. This is both easy and inexpensive, requiring just a few cans of expanding spray foam, pure silicone adhesive and organic fiber. To make things easier, try to find black or gray foam and brown silicone adhesive so they blend in with the planted tank. Essentially, spray foam is applied directly to the back and sides of the tank where it expands and hardens into a rigid form. During the initial spraying; rocks and wood can be stuck into the background and permanently foamed into place. Then the foam can be carved or sanded into the shape of rocks and roots using files and knives. You can slowly build up the foam, adding more if necessary until you have the desired shapes. Then it is time to prepare the foam for the organic material; the simplest way is to first smear brown or clear silicone all over the surface. Make sure you use rubber gloves and have adequate ventilation to disperse the vinegar fumes. Then quickly cover this with coir, peat, bark, or other materials and press it into the adhesive. The easy way to do this is to flip the whole display on its back so you can simply pour the organics onto the foam. As it becomes tacky, more organics are pressed on, and after a

few hours the excess can be vacuumed out leaving a very natural looking background. The most important thing while building with this method is to get as much detail into the foam as possible. With practice, you can spray out roots, tree trunks, and rock formations; and achieve great depth by sanding them into the final shape. After a few months these foam and organic backgrounds will become lush with mosses and liverworts with proper moisture.

Epoxy Resin: The main problem with the above mentioned backgrounds is that none of them are truly permanent or inert. After many years they will start to break down and none of them can easily be disinfected if necessary. This is why public zoos and aquariums go with a much more permanent solution, usually some type of two-part epoxy putty or concrete. This has become my favorite solution to getting total flexibility and creativity out of the background. Public displays often use a two-part epoxy paste manufactured by Polygem Inc that can be sculpted, molded, and carved into very realistic rocks and tree parts. It sets to a rock hard, non-toxic, waterproof plastic that can be tinted with colorants or painted. This is without a doubt one of the most advanced endeavors to work on in designing a display. It can take a lot of experimenting to achieve the right look, and the cost of the epoxy is significantly higher than other background materials.

The first step is to build up the main structure using sheet foam, spray foam, or wood. Try to get a close to the final shapes as possible using these fillers, so you can use the least amount of epoxy as possible. For instance, if you are recreating a tree buttress then form all the roots out of sheet foam first, pinning and gluing them together to build up the trunk. Then you can use spray foam to fill out the corners and gaps, and then carve and sand everything back down to a realistic form. When the form looks like the final shape, you will have to cover it with a thin layer of epoxy. Most epoxies come in either white or cream, so now is the time to give it some natural color by using dry concrete tints. Mix some colorant into the epoxy paste until you have a natural color and spread onto the foam form using a plastic putty knife. When thoroughly mixed, this is applied to the foam form to a depth of 1/8 - 1/4 inch. As it hardens, you can use wet, gloved hands to mold it and form it into the cracks. Further detail is then achieved by using artist's sculpting tools to scratch details into the paste. While it is still soft, molds or stamps of bark or rock can be pressed onto the epoxy to give extreme detail. When everything has hardened for a week or so it is ready to go in the exhibit.

Vines and Roots: Additional details can be added by making epoxy roots and vines. The easiest way is to take stainless wire or nylon rope and smear the epoxy over it in a smooth manner. With the "rope" still soft and flexible, position it into the desired shape. As it dries, use a very fine wire brush to lightly add some bark detail to the vine or root. When fully hardened, they will be permanently set into position and ready to have plants placed on them.

Concrete and Grout: Realistic rock and stone backgrounds can also be created using thin-set concrete or tile grout. This is the ideal method for drier habitats such as desert or savanna setups. All of these are made with a mix of Portland cement, fine sand, and coloring depending on the product. The actual product is important, try to use either fortified thin-set underlayment cement

or tile grout. The tile grout is great since it is available in a wide variety of natural stone colors. First a basic shape is made using both sheet and spray foam just like we did with the epoxy. You can build the whole background on one big sheet of foam to make the end product a solid, one-piece design. Again, get as much detail into the foam as possible. Then the whole thing is covered with a very thin layer of thin grout. Let that dry for awhile and then do another coat. Repeat until you have between a 1/8" and 1/4" thickness. Keep the grout damp by misting water on it to slow down the drying time; this will prevent cracking. Now it will need to be cured underwater for a few days. All cements and grouts have an incredibly high pH level that needs to be neutralized by soaking it in a mixture of vinegar and water. Let the background soak for a couple weeks until it is fully cured and neutralized, changing the water often. You can now place it onto the back of the enclosure and secure it using silicone. Let the system run for a few days and check the pH before adding plants.

Silicone Tricks: Silicone is a very useful material to work with when you are adding detail to the display. It can be mixed or coated with a variety of materials to form shapes. Here I will explain how to use it to make:

- Vines: Use stainless steel wire of various diameters to form the "vine". Then coat it with an initial layer of brown silicone. When that dries, apply an additional layer of silicone and then place on a tray covered in organic fiber (coco/coir, tree fern, peat moss). Press the material into the silicone and let dry. When dry, brush the excess off and use a blow torch to quickly burn off the "hairs".
- Roots: Fray the end of a large polyester rope, preferably brown or black. Try to separate the ends of the fibers as fine as possible. Then coat the threads with silicone and coir.
- Silicone Roots: This is a bit tricky; you'll need latex gloves, a mixing cup, stir stick, and a large heavy duty plastic syringe. Essentially you mix one part silicone (clear) with one part ultra fine coco/coir fiber in the cup. Then you scoop this into the back of the syringe and put the plunger back in. Now, carefully squeeze the mix out into thin beads directly onto rocks and the background. The most important thing here is to use a really big syringe and to work fast. When you're done it should harden in place. This may take quite a bit of experimenting to get the right look, and is very messy to work with. An easier way is to just put thin beads of brown silicone on the background in the shape of roots and vines. At first it will look like veins sticking out of the rock or wood, try to overlap and connect the beads before smoothing the ends into the substrate. Then carefully push coco/coir fiber onto it and let dry.

Rock: For rock or stone backgrounds and landscapes the use of molds is the easiest way to get realistic results. Sand or mineral aggregates can be either mixed into the epoxy while wet or sprinkled over the surface to give added texture and realism. A lot of times the epoxy takes on an unrealistic, shiny appearance once it's dry. An easy way to remedy that is to use a fine stainless steel wire brush on the end of a drill. It will quickly give the surface a brushed, rustic look.

Planting Areas: Plants placed onto the background will need some sort of support to hold them and provide a place for their root mass. The simplest way to achieve this is to create pockets and voids in the background during construction. How big the pockets need to be will depend on what plant species will be placed there. For instance; most bromeliads only need something to anchor them to the substrate, their roots do not require actual soil. They can be pinned to the background with wire or wedged into cracks. Larger, moisture loving epiphytes like *Anthurium* or *Peperomia* should have a couple cubic inches of soil to give them adequate moisture and hold their large root mass. For smaller epiphytes I like to make a "nest" to set them in until they become attached. This will allow you to recreate many natural scenes such as aroids hanging precariously on a thin vine or root. To do this I take osmunda/tree fern fiber and mix it with enough silicone to make it stick together and attach this small clump to a vine or other surface. The idea is to form what will look like a tiny bird's nest on the vine. As it dries it can be shaped to look like a natural root mass. After drying and rinsing, a small epiphyte can be set on this support where the roots will quickly intertwine with the osmunda fiber.