



# Directions For Use

## Using Cactus Juice

Cactus Juice is a heat cured resin used to harden and stabilise most porous material, especially wood. It comes pre-activated in pints and quarts and ready to activate with the included activator in 1/2 gallon and larger (activating directions). It is quite easy to use and obtain professional results in your home shop following these simple directions.

### Items Needed

- Cactus Juice
- Stabilising chamber (Cactus Juice Stabilising Chamber, pickle jar, or pressure pot converted for vacuum use)
- Vacuum pump capable of achieving a minimum of 29" Hg at sea level or 100 microns or less . Higher vacuum will produce better stabilised blanks. (I highly recommend an electric rotary vane vacuum pump since it may take over an hour of vacuum to fully evacuate the blanks of air) See this article for an explanation of vacuum and stabilising
- Small toaster oven (often available at second hand stores for around \$10)
- Aluminum foil
- Material to be stabilised (10% moisture content or less, preferably 0%)
- Personal protection equipment including Latex or nitrile gloves and eye protection

### Quick Start Basics for Use

- Prepare blanks
- Place blanks in vacuum chamber and weight down
- Add Cactus Juice to completely cover blanks
- Apply full vacuum to chamber and keep your vacuum pump running until bubbles stop
- Release vacuum and soak blanks for at least twice as long as you had them under vacuum
- Remove blanks
- Wrap in foil
- Cure at 190-200° F (87-93° C) until cured
- Remove foil
- Allow to cool to room temperature
- Store your excess Juice for the next use (DO NOT STORE IN AN AIR TIGHT GLASS JAR!)

### Preparation

The first thing is to make sure your material has less than 10% moisture content and clean. If you do not have a moisture meter, don't worry! An easy way to assure your blanks are as dry as possible is to place them in your toaster oven at 220° F (104° C) for a minimum of 24 hours. Then remove the blanks from the oven and let cool to room temperature in a zip lock bag or other air tight container. This is necessary because a super dried, hot piece of wood will start picking up moisture from the air as soon as they start to cool down. If your blanks are hot when you add the resin, it will cause premature polymerisation and you will have complete failure!

Oily woods such as Cocobolo and Rosewood should be avoided. The reason is that under vacuum, the oils in the wood will be drawn out and can possibly contaminate the Juice to the point it will not cure properly.

### Add Cactus Juice

Next, place your blanks in the stabilising chamber and weigh them down. Add the necessary amount of Cactus Juice to the stabilising chamber so that the blanks are completely submerged with about 1-2" (25-50 mm) of Juice covering the blanks. Make sure your stabilising chamber is in a secure, stable location. A vacuum chamber under vacuum may implode if exposed to sudden shock such as hitting the floor!

### Colouring Cactus Juice

Cactus Juice can be dyed when you want to add some colour to the wood. I have tried various different dyes and have had the best success with Alumilite reactive dyes. They are very concentrated and produce nice, vivid colours that mix and work well with the Juice. Some other dyes can be used in small amounts but if you add too much, it can affect the way the Juice cures. With Alumilite dyes, I have not had any issues with it affecting the cure of the Juice. Be sure to use more dye than you think you need!

### **Apply Vacuum**

After the Cactus Juice has been added to the chamber, place the lid on the chamber. You may need to apply a little pressure on the lid to get the gasket to seal. When you initially start the vacuum, you will be pulling an extraordinary amount of air out of the blanks which will cause the Juice to foam up considerably. It is best to open the vacuum control valve completely before starting the pump and slowly close it, keeping the foam under control. After the major foaming has subsided, apply full vacuum.

Depending on the wood you are stabilising and the vacuum pump you are using, it could take anywhere from 30 minutes to a number of hours to fully evacuate the air and stabilise your blanks. If your wood contains any moisture at all, you will continue to get tiny bubbles for MANY hours. I suggest drying your wood as mentioned above. Keep the vacuum going until you see very few bubbles coming from the blanks. After all the air has been evacuated, release the vacuum and turn off your pump. *It is really important to not shut off your pump while under vacuum if you are using a rotary vane pump. You will cause premature wear on your pump.*

Allow the blanks to soak for twice as long as you had them under vacuum at a minimum. A longer soak, up to overnight, will yield better results in many species of wood. Remember, the majority of resin uptake occurs AFTER you release the vacuum. Some species of wood such as Walnut and Redwood benefit from an extended soak. I usually soak these for 1 week.

If you have the equipment, you can also add a pressure cycle to speed up penetration. Adding pressure is not necessary for complete penetration, it just slightly speeds up the natural equalisation process you can get by just allowing the blanks to soak.

### **Curing the Blanks**

Remove the blanks from the resin after they soak. Allow the excess Cactus Juice to drain from the blanks and then wrap them in aluminium foil. It is a good idea to wrap the blanks individually so that they don't become one solid mass once the Juice cures. An easy way to do this is to roll out a 2' (60 cm) piece of foil and start at one end, rolling the first blank in the foil until it is covered. Then add the second blank next to the first and wrap all of it again. Then add the third and repeat until all blanks are wrapped. Fold the ends over and you are ready for the oven.

Foil is not necessary and does not help keep Juice in the wood. It is there for 2 main reasons, contain the mess (some of the Juice will bleed out when heated) and to allow you to stack more blanks in your oven at one time. Remember, if you stack blanks together or let them touch without the foil, they will cure as a solid block that will have to be cut apart!

Now place the wrapped blanks in an oven pre-heated to 87-93°C (190-200°F). Be sure to check the actual temperature of your toaster oven with an oven thermometer. The dials on toaster ovens are notoriously inaccurate. Too hot will not harm the Juice but will cause more of it to "leak" out of the blank before it cures. The internal temperature of the blank needs to reach 190-200°F (87-93°C) for a minimum of 10 minutes for the Juice to cure. This usually takes around 1-1.5 hours for the typical pen blank but may take longer for thicker material. It does not hurt to leave the blanks in the oven even longer but once you take them out, if you let them cool down and they are not completely cured, placing them back in the oven will NOT cause a complete cure. It is best to err on the side of caution and cure them longer until you get a better feel for the process. One way to be sure of proper polymerisation is to put on some good gloves and remove the blanks from the oven when you think they are ready. Peel back some of the foil and if you see any liquid Cactus Juice, immediately wrap them back up and put them back in for another hour without allowing them to cool down.

### **Finishing Up**

Once the blanks are finished curing, remove the blanks from the oven with gloves and un-wrap the foil. Allow the blanks to cool to room temperature. Once the blanks have cooled, you can scrape off the resin that has bled out of the blank or clean it up on a saw. This step is not required but will help you see the finished blank better to determine how you want to use them. A belt sander also does a great job.

### **Cleaning the Chamber and Storing Your Excess Juice**

When finished with the stabilising process, pour the excess Cactus Juice from the chamber and save it for later use. I use quart plastic paint mixing cups with lids that you can buy in the paint section at your local home improvement store. **DO NOT STORE YOUR JUICE IN SEALED GLASS JARS!** It will cure on its own over time. Cactus Juice does not evaporate so there is no need for an air tight lid. Once the excess Juice has been removed, simply wash out the chamber with dish soap, water, and a rag. Be sure to allow it to dry completely before your next use.